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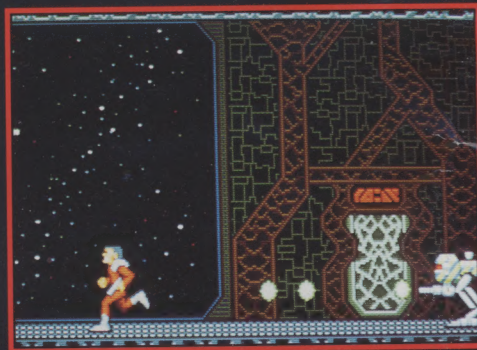
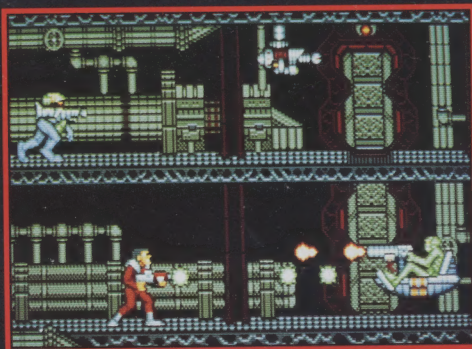
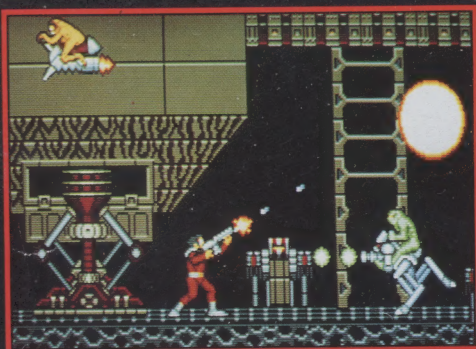
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THE AMIGA DIMENSION

THE SWEET TASTE OF SUCCESS

Developers, particularly of software, frequently complain bitterly of lack of support from computer manufacturers. They often seem to be suggesting that somehow the manufacturer is neglecting his duty to make their life easy – or at least easier. Discontented, even mournful, is perhaps the best description of the expression generally found on a developer's face. It is the computer manufacturer who for some clearly malign reason has set out to destroy ages of work by deliberately changing the specification of his own computer! So 2.0 becomes 2.1 and 2.3 and 2.4 are promised immediately ... Computer manufacturers, on the other hand, sometimes appear to take the view that the developers have freely chosen to enter the market and whether they are successful has nothing to do with the people who create and shift the boxes.

Commodore, like any other computer manufacturer you care to name, has often been accused of, and probably occasionally been guilty of, this somewhat cavalier attitude. Of course, both developer and manufacturer need each other and if there is one thing that gets in the way of the success of a computer, it is a public perception of a lack of things to go with it. The Amiga suffered at the beginning from this perception; and no matter how hard anyone protested those who were ignorant or even malicious kept saying that maybe the Amiga was a good machine but there was nothing to run on it ... It was not until we started publishing the list of available products that this perception began to change.

The success of the Amiga, from the flood of products now occurring, and the clear realisation among a growing public that the Amiga is here to stay, shows that

the developers are beginning to get to grips with it and the Amiga users are getting what they want. However, most non-game products still come from the U.S. It is pleasant therefore to report that Commodore and non-U.S. developers recently got together to work out how to collaborate to both their own and the Amiga user's advantage. The meeting took place in the U.K. where one of the very positive moves was the decision to form CATS – Commodore Amiga Technical Support. Developers registering with CATS will be able to contribute to and receive back-up from an eventual worldwide CATS network. This is the kind of good idea that always makes one ask why no-one thought of it before.

Perhaps the answer is that as success comes, as it is now beginning to arrive for the Amiga and many connected with it, there is both more to gain and more to

lose – a good reason for the spirit of collaboration noticable at the recent meeting to produce some positive results for everybody.

So, if you happen to meet a non-U.S. software developer and surprisingly he is not looking quite so self-pityingly mournful or see a CBM person with a specially virtuous expression, you may well be seeing something of the truth of the slogan "Only the Amiga Makes it Possible" – or at least the agreeably heartening effect of the computer's growing success.

Antony Jacobson
Managing Editor & Publisher

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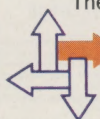


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Meggido Magic

Meggido Enterprises are currently promoting three new Amiga releases; The computer black book, Recipe-Fax and Nutri-Fax. The computer black book is described as "The phone directory of the future". It is a means of storing all your names and addresses, at home or the office. These can be listed and printed out on labels etc., or spoken by the Amiga. It can also do all your dialling for you, catering for both tone and pulse telephones. Another useful feature is the provision of multiple user files to enable home, business, club addresses etc to be kept separate. Recipe-FAX is a program designed to help anyone who ever cooks from recipes but... finds that the quantities quoted are often for a different

number of people. Doubling up or halving the ingredients is not too difficult but when the book says 6 portions and you need 7 then things can start to get complicated! Recipe-Fax will convert up or down, allowing ingredient measurements to be entered in decimal or fractional format. Recipes may be typed in from a book etc. or chosen from the 100 Meggido have included. Once you are happy with your conversion it may be printed out or saved for future baking days. Nutri-FAX will give you information on the nutrition provided by a recipe. These can be typed in or from a Recipe-FAX file. Data for 13 popular nutrients is given. These, again, can be saved and/or printed out. PRICES: The Computer Black Book - \$35.95. Recipe-FAX - \$49.95. Nutri-FAX \$139.95. CONTACT: David Ruf, Meggido Enterprises, PO Box 3020-191, Riverside, CA 92519.

The Coming of Armageddon

Soon to be released by Martech on all major 16 bit formats is The Armageddon Man. Set in the year 2032 AD, it seeks to marry the entertainment of computer action with tactics and mental energies, more is keeping with a game of chess. In this time there exists sixteen superpower nations, each with enough Nuclear arms to trigger the ultimate destruction - Armageddon. They have combined to form a desperate alliance, the UNN (United Nuclear Nations) and built up an enormous network of spy and laser defense satellites which effectively control the rest of the world. Controlling the network, via a giant satellite, you are the Armageddon Man. Your task is to reduce the chances of war between enemy countries by maintaining an equal balance of power and resources. Should you fail in your mission then it is up to you to at least act to keep civilian casualties to a minimum. Politics play a large part in the saving of the Earth and winning the confidence of each of the sixteen leaders of the superpowers is essential. It comes complete with a colour vinyl map of the

world (2032 AD style) and re-usable vinyl flags to assist you in monitoring changes in the alliances between the superpowers.

PRICE: £19.99.

CONTACT: Martech, Martech House, Bay Terrace, Pevensey Bay, East Sussex, BN24 6EE.

20 Meg Removable Drive

The Bernoulli infinite memory 5.25" removable drive is now available in Europe. It has been designed to interface to all Amigas (internally on the 2000 and via an external card cage on the 500 and 1000). It utilises 20Mb removable cartridges as storage media. Each cartridge can be formatted for Amiga-DOS or MS-DOS (when used with the XT-Bridgeboard) or a mixture of both. Although the initial cost is higher than Kodak's 10Mb floppy drive and the rigid disk Winchester type drives, because you can add as many 20Mb cartridges as you wish,

Deluxe Productions

Electronic Arts have announced the release of Deluxe Productions, an aid to professional quality, high resolution video presentations. It allows Amiga users to combine high resolution graphics with computer animation for business and educational productions, live television broadcasts and video demonstrations. Stewart Bonn, Vice president of Electronic Arts Creativity Divisions, explained "Deluxe Productions puts users in control of any video production by providing a sophisticated storyboard design concept. The program allows directors to create up to 12 scenes per production, each containing up to 5 clips. Each clip contains one animated object." It also features the ability to work in overscan and chain productions together to create long or looped presentations. Play capabilities include pause, forward and backward functions. Other useful facilities are; double buffered animation, a palette of 4096 separate colours, a selection of over 40 wipes and broadcast quality fonts for titling work. Deluxe

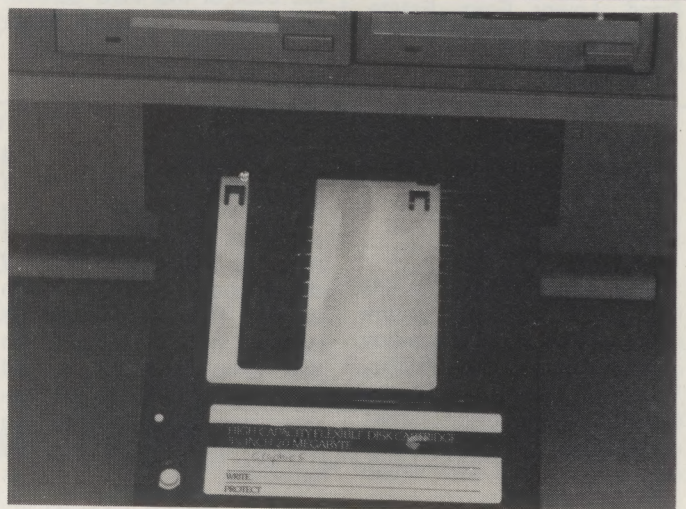
Productions comes complete with three free art disks, containing high resolution background objects and three sets of fonts for creating custom titles. The program may be used on any model of Amiga with 1 Megabyte of RAM. PRICE: \$199.95. CONTACT: Electronic Arts.

Photosynthesis

Image processing on the Amiga continues to attract quality software and the latest addition to the field is Photosynthesis from Escape Sequence Inc., of New York. The program has been developed with the scientific, medical, educational and video industries in mind. Interaction is with the mouse but there is also the added advantage of a script interpreter for professionals wanting to tailor output to their own needs. Photosynthesis runs on all Amiga models with at least one Megabyte of memory and twin drives. Its memory management technique allows for 320 x 200 images resident at the same time.

PRICE: \$149.95

CONTACT: Escape Sequence, P.O. Box 1101, Troy, NY 12180, USA. (518) 274 1547.



this system can work out very economical. With cartridges costing only £50 each, the price per Megabyte works out far lower than any other read/write mass storage device. The removable drive also has a fast access time, the average being 10 ms. Users who need to store large amounts of data, such as digital video and digital audio will appreciate

the ease of management the use of 20Mb slices can provide. Cartridges have the added bonus of being easily transportable and can even be posted.

PRICES: Drive - £1695, 20Mb cartridges £50.

CONTACT: Buurocare Computer Systems, 211 Kenton Road, Harrow, Middx HA3 0HD. (01) 907 0027.

Group 68

This month we have heard about a new U.K. user group which is exclusively for users of 68000 based micros. It is a branch of the West Midland Amstrad User Group. The club secretary, Stuart Williams told us that the need for such a branch arose when an increasing number of their existing members made the change from the Amstrad to a 68000 based machine. Club facilities and activities include programming and specialist classes (i.e. Comms, CP/M, MSDOS etc) plus free insurance, club library and subsidised outings to computer shows. Stuart is particularly keen to build up a PD domain software library for free use by members. New members are very welcome, although at the moment membership is limited to those who can attend the weekly meetings in Walsall. The cost is £4.50 per term (£2.50 for under 16 years of age), fully inclusive. Meetings are held at the Blue Coat Comprehensive School, Birmingham Street, off Springhill Road, Walsall, West Midlands, every Thursday between 7pm and 10pm. Alternatively, you can contact Stuart Williams at 26 Matlock Road, Lower Farm Estate, Bloxwich, Walsall, West Midlands, WS3 3QD.

Swedish Safe Screens

The Swedish electronics company, Ericsson, are taking the reputed health risks involved in computer operating, very seriously. They have produced a VDU screen which gives off a much smaller than average electromagnetic field. Although the link between VDU screens and a high incidence of leukaemia, miscarriages, sterility and other ill effects has not actually been proven, many users in Sweden have obviously decided that it is better to be safe than sorry — Ericsson have captured 80% of the Swedish home VDU market. The EMF produced by a normal VDU screen is 'compensated' or cancelled out by the new system. This is done using a second electrical field running in the opposite direction. There is also a smaller amount of electrostatic radiation as the screens are more conductive. One drawback to this method of controlling the potentially harmful emissions is that it adds about 30% to the cost of the VDU screen. This does not, however, seem to be worrying the Swedes.

For cleaning screens and plastic surfaces of peripherals RPS have produced two new products; The first is a kit made up of eight twin 'wet and dry' sachets containing cotton wipes. The wet tissue is soaked in a cleaning lotion that aseptically treats the surface and deposits an anti-static film which restores the shine but eliminates dust attraction. The dry tissue is used to absorb any excess moisture and remove the dirt in solution. The other is a non-drip, non-splash cleaning foam for larger items of hardware. It gives an anti-steam and anti-static treatment whilst dissolving dirt and grime, allowing it to be easily wiped away.

CONTACT: RPS, High Street, Houghton Regis, Beds LU5 5QL (0582) 867222.

RPS Clean Up

A new range of cleaning kits has recently appeared on the market from one of the leading computer media specialists, RPS. For 3.5" and 5.25" disk drives there are head cleaners comprising a proprietary cleaning diskette and fifteen sachets each containing a measured amount of cleaning fluid. A sachet of fluid is applied to the cleaning diskette before inserting it into the drive for 60 seconds. RPS say that regular cleaning in this way eliminates all trace of dust, cigarette smoke and oxide particles from the surface of the disk itself and should reduce errors in reading and writing.

Paragon Time Lords

Paragon Software have produced a new futuristic role-playing game; Alien Fires — 2199 A.D. You assume the role of a mythical traveller who transcends the barriers of time. As a novice Time Lord your mission is to find the scientist who has created an awesome time machine and then mysteriously disappeared. To prove yourself worthy of the recognition of

the Time Lord Elders you have to destroy the machine. Your character's strengths and weaknesses may be custom designed, determining attributes, in Alien Fires — 2199 A.D. reportedly features digitised rock music. Smooth scrolling 3D colour graphics and speech synthesis. It will be distributed by Electronic Arts.

PRICE: \$39.95.

CONTACT: Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404 EA 177.

Amiga Conversions

Among the conversions to be issued later this year by Hewson are: NEBULUS — Pogo and his submarine land at the base of the towers which keep mysteriously appearing on the sea floor. His task is to reach the top and detonate the destruction sequence. ZYNAPS — A shoot-em-up set in an alien infested planetary system. EXOLON — The heavily armed humanoid blasts, battles, bounds and blunders his way through the game. Hewson have also scheduled the release of two new Amiga games for the Autumn: ROADSTAR XRI — A 3D racing shoot-em-up and ANGEL OF DEATH — A cross between an adventure and a mystic shoot-em-up.

CONTACT: Hewson, Hewson

Citizen Colour

Citizen's new HQP40 has just been launched onto the UK market. It is a 24-pin, 80 column, dot matrix printer. A seven-colour kit is available as an optional extra and Citizen also offer a range of font cartridges which simply plug in. Three modes of printing are available on the HQP40; Draft (200 cps), Correspondence (132 cps) and Near letter quality (66 cps). As a result of the launch of the HQP40, Citizen have cut the cost of their 136 column HQP45 from £795 to £599.

PRICE: £499, Colour Kit: £50 CONTACT: Citizen Europe (0895) 72621.

House, 56b Milton Park, Milton, Abingdon, Oxon OX14 4RX (0235) 832939.



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Selected items:

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Aegis	— Sonix	£59.00
Maxisoft	— Maxiplan 500	£115.00
Micro111	— Photon Paint	£79.00
Zuma	— The Director	£45.00
New Tech	— DG Paint	£46.00
New Horizon	— Prowrite v.2	£99.00
Micromagic	— Forms in flight	£63.00
Aegis	— Ports of call	£39.00
Microsearch	— Headcoach	£39.00
Psygnosis	— Obliterator	£24.00
Sublogic	— Jet	£39.00

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Laser Quality Ink-Jet

The latest ink-jet printer from Hewlett-Packard will soon be available – the HP DeskJet. It is aimed towards users of dot matrix printers who may have considered upgrading to a laser printer but are put off by the cost. Hewlett-Packard claim that the HP DeskJet produces laser quality print on ordinary plain paper, which is fed in through an automatic cut-sheet feeder. Envelopes can also be fed in via a manual envelope feeder. Like a laser printer, the HP DeskJet produces 300 dpi and will re-

portedly print up to two pages per minute in letter-quality mode and three pages per minute in draft. It comes with Courier, Courier Bold and Courier Compressed come as standard and extra fonts may be added. The HP DeskJet comes with Centronics and RS232C ports as standard. Hewlett-Packard's PCL printer language is supported, making it compatible with other software applications supported by the HP LaserJet printers.

PRICE: Expected to be under £900.00.

CONTACT: Burocare Computer Systems, 211 Kenton Road, Kenton, Harrow, Middlesex HA3. 01-907 3636.

Unprotected Creativity

Electronics Arts have announced the removal of the copy protection from all their "Creativity" titles. In the future, all new titles in this range will be issued unprotected. In addition, all existing Deluxe products (including Deluxe Paint II, Deluxe Music Construction Set, DeluxeVideo 1.2 and DeluxePrint) will be sold without copy protection. This follows their decision, last year, to release protection-free IBM/Tandy compatible software. Tim Mott, Electronic Arts Senior Vice President of U.S. Publishing, commented that "Customers in the market for creativity titles generally look for products with more features, quality results and convenient use. The removal of copy protection from our creativity titles will provide customers with all three benefits." He also noted that it would alleviate the problem of users misplacing or accidentally destroying precious key disks. "It will also allow users who are serious about what they are creating to store the software on a hard disk or make as many backups as they need," he added. Should you purchase an existing copy-protected Deluxe product, Electronic Arts tell us that they will replace the program free

B.T. Network Nine

British Telecom have just expanded their "Network Nine" service with a new centre in mid-Wales. This centre will join their others in providing information technology facilities for the travelling businessman, small firm etc. who may only need them for a short time. This could be on a one-off basis or a regular booking. The hirer will have at his disposal an office plus a whole range of computer and telephone links, including pocket telephone, for a minimum period of one hour. There are currently centres situated in Thames Valley, Aberdeen and London.

of charge within 90 days of purchase (proof of purchase is required). Thereafter, a standard charge of \$7.50 applies. Those of you who have taken advantage of their backup offer (\$20 for an unprotected backup copy) or their upgrade offer (\$57 for an unprotected upgrade) will receive their order plus a \$20 gift certificate towards the purchase of selected creativity titles direct through Electronics Arts.

CONTACT: Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404 EA 183 (415) 571-7171 x379.

Compiler companion

Lattice have introduced a Companion to their Compiler. It comprises ten utilities designed to enhance the productivity of Amiga programmers using BASIC, MODULA-2, FORTRAN, PASCAL and ASSEMBLER as well as C. It is intended to replace the CXREF, LMK and Text Management utilities offered separately by Lattice in the past. Since they have been recompiled using Lattice's AmigaDOS C compiler Version 4.0 they require less memory and execute much faster than before. Instructions for all the programs have been brought together in one new manual. The price represents a considerable saving over the cost of the utilities bought individually.

PRICE: \$99.00

CONTACT: Lattice Inc., 2500 South Highland Avenue, Lombard, IL 60148. Tel: (312) 916-1600.

Free terminals

Chris Curry, the founder of Acorn Computers, is planning a new service in the U.K. which will work in a similar way to the French Teletel system. The French Government started issuing free computer terminals instead of the usual telephone directories. As a result the Teletel service now has an enormous user base. Chris Curry is hoping that a similar scheme could be run in Great Britain, although whether the service would take off to the same extent without the on-line telephone directory offered in France is doubtful. However, it must surely only be a matter of time before the major UK telephone company, British Telecom, decide that the on-line directory is the most sensible system for a country as technologically up to date as Great Britain.

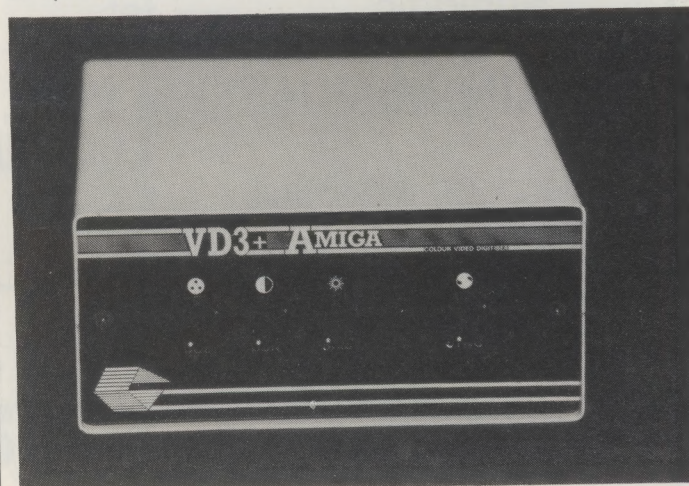
Real-Time Digitiser

The VDAmiga VD3 is a real-time digitiser that allows the user to take input from any video source and convert it into a format capable of being manipulated by the Amiga. Digitising is done in real time i.e. 1/50th of a second. The picture is stored in the VDAmiga's memory and then transferred to the Amiga via the printer port. The screen can be updated at up to 10 frames

per second, depending on the resolution used. A complete PAL picture can be read by the VDAmiga. Also available is the VDAmiga VD3 + colour digitiser which allows full 4096 colour digitising from any colour video source, including video tape.

PRICES: VD3 – £550 + VAT, VD3 + COLOUR – £795 + VAT.

CONTACT: BC Marketing, 211 Kenton Road, Harrow, Middx HA3 0HD. (01) 907 3636.





Paint



Available on Amiga £69.99.

microillusions



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Finedon Road Industrial Estate, Wellingborough, Northampton NN8 4SR
Tel: (0933) 76768.

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Image not quite right?

Everyone, at one time or another, has come across a car that is too short, a tree in the wrong place, or a sky that's too grey. Now, with Microillusions' Photon Paint, a new, high-tech paint program for micro-computers, these adjustments can be made at home. A scanned photograph, or an original image created on the screen of your micro, can be altered to your exact specifications. Your 'doctored' or new image can then be printed out onto paper, transparencies, or even onto Polaroid film.

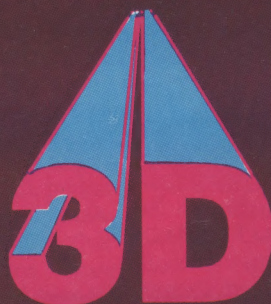
Photon Paint does this through a combination of features from a 32 colour paint program and a HAM paint program, with features which were previously unique to the most sophisticated, high end graphics systems.

FEATURES

- Sophisticated brush operation including twisting, adjustable transparency and mouse operated perspective tilting.
- Rotating and resizing.
- Wrapping of brushes onto 3-D objects; i.e. balls, cones, cubes and free-hand drawn shapes.
- Luminance - light sources from a user-defined direction and intensity.

Watch out for Photon Paint in early June!

ANIMATE



Byte By Byte

Byte by Byte's Sculpt 3D has been responsible for many of the incredible graphic demos that are still regarded as the most stunning examples of what can be accomplished by the Amiga. John Walker checks out an extraordinary Sculpt 3D add-on

Many Amiga users will be familiar by now with those definitive graphic demonstrations, Erica Graham's Juggler and Boing Machine and Kenneth Offer's Kahnankas (or Newton's Cradle, as some of us know it). What they show is not only the Amiga's power but the capabilities of ray-tracing programs to create spectacular effects.

The three animations surprise by their solidity and reality – due in part of reflections revealed in shiny surfaces: the checkered landscape visible in the glass globes tossed by the juggler; the silvery glints of the shining spheres of Newton's cradle, each mirroring the movements of the others and glinting in a brass lamp in Kahnankas; the striped ball bouncing down an iridescent slope in Boing Machine. We found them so interesting we have featured them on the cover of A.U.I.

What all have in common is that they were developed using Dr Graham's Sculpt 3D, a clever and, considering its complexity, easy-to-use three-dimensional modelling program. Now, to make it easy

for all to create similar moving marvels, comes Animate 3D.

While Sculpt 3D is a stand alone program, Animate 3D is not. It will not function without Sculpt 3D. Indeed, your first task will be to transfer Sculpt 3D to a backup copy of the Animate 3D disk and click on an icon to merge the two programs to form Sculpt Animate 3D.

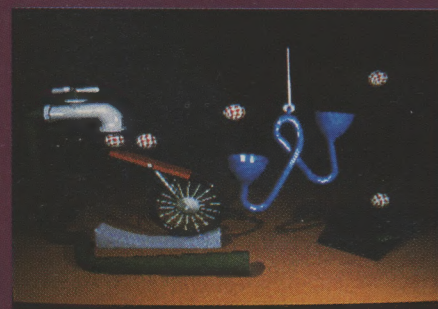
The only visible difference to a Sculpt 3D user, apart from the creation of a new icon for the

'Symmetrical objects such as doughnut shapes can be drawn by defining a curve and spinning it on its axis.'

program, will be the addition of some extra commands to its pull-down menus.

The screen display remains the same as in Sculpt 3D: the so-called Tri-View of three windows that each give a different view of the 3D objects that you will create.

Sculpt 3D is not a conventional graphics program. It models solid



shapes using ray-tracing techniques. In ray-traced graphics, the colour and intensity of each pixel is calculated according to the amount of light falling upon it. This is a lengthy process that can take several hours, even though the latest version of Sculpt 3D is about twice as fast as the original program. It is best done overnight, with the Amiga working away while you sleep.

Three dimensional shapes are first created as wire-frame outlines in the Tri-View, which provides overhead, north and west views of them. Like other Amiga windows, these can be dragged around and re-sized but the Tri-View windows also have extra gadgets to manipulate the wire-frame outlines and to expand or contract the view.

These wire-frame drawings are formed of triangular faces joined together. The concept of a vertex is important here. A vertex is the point at which one line (known as an edge since it defines the limit of a triangular face) ends and another begins. By selecting and dragging specific vertices you can

alter the appearance of the shapes formed by the triangular faces.

In order to speed up the drawing process, the program provides ready-drawn spheres, hemispheres, cones, cylinders, cubes, prisms, tubes, discs and circles.

A sphere will not be precisely spherical, since it is made of triangles but its faces can be modified by smoothing them and once texture is added – the result looks good. Symmetrical objects such as doughnut shapes can be drawn by defining a curve and spinning it on its axis.

Shapes can be copied and saved to disk so that they can be used on other occasions. From these wire-framed outlines and the decisions made on surface-smoothing and texture, Sculpt 3D generates images of solid 3D objects with colour, shading and shadows.

To achieve this, it uses, as in photography, the idea of an observer looking at the object. You need to specify the position of the observer and the direction in which the observer is looking. You can alter the angle of the observer's view – whether it is through the equivalent of a fish-eye, wide-angle, normal or telephoto lens – which will in turn change how the object will look.

Its appearance will also depend upon the way light falls upon it; you therefore need to mark the position of a light source or sources. The program has an automatic exposure feature so that the final image will be lit correctly but you can override it if you want to create a very bright or a sombre picture.

In order to check your progress, you can call up in several different ways, an image of the scene you are creating. You can view it as a painting, which is drawn quickest even at full-screen size and can be saved as an IFF-format file for loading into a paint program, or as a ray-traced image.



As these take longer to process, ray-traced graphics are best viewed in miniature form, either as a simple image or as a complex one showing the effects of shadows. The program works in high- and low-resolution, with and without interlace and in the HAM graphics mode that uses 4096 colours.

You can use either the mouse and pulldown menus or keyboard equivalents to control the drawing of objects. However, there is another way – and that is by creating a text file, or script containing a list of commands using a special graphics language, which will then be executed.

Sculpt 3D comes on a single

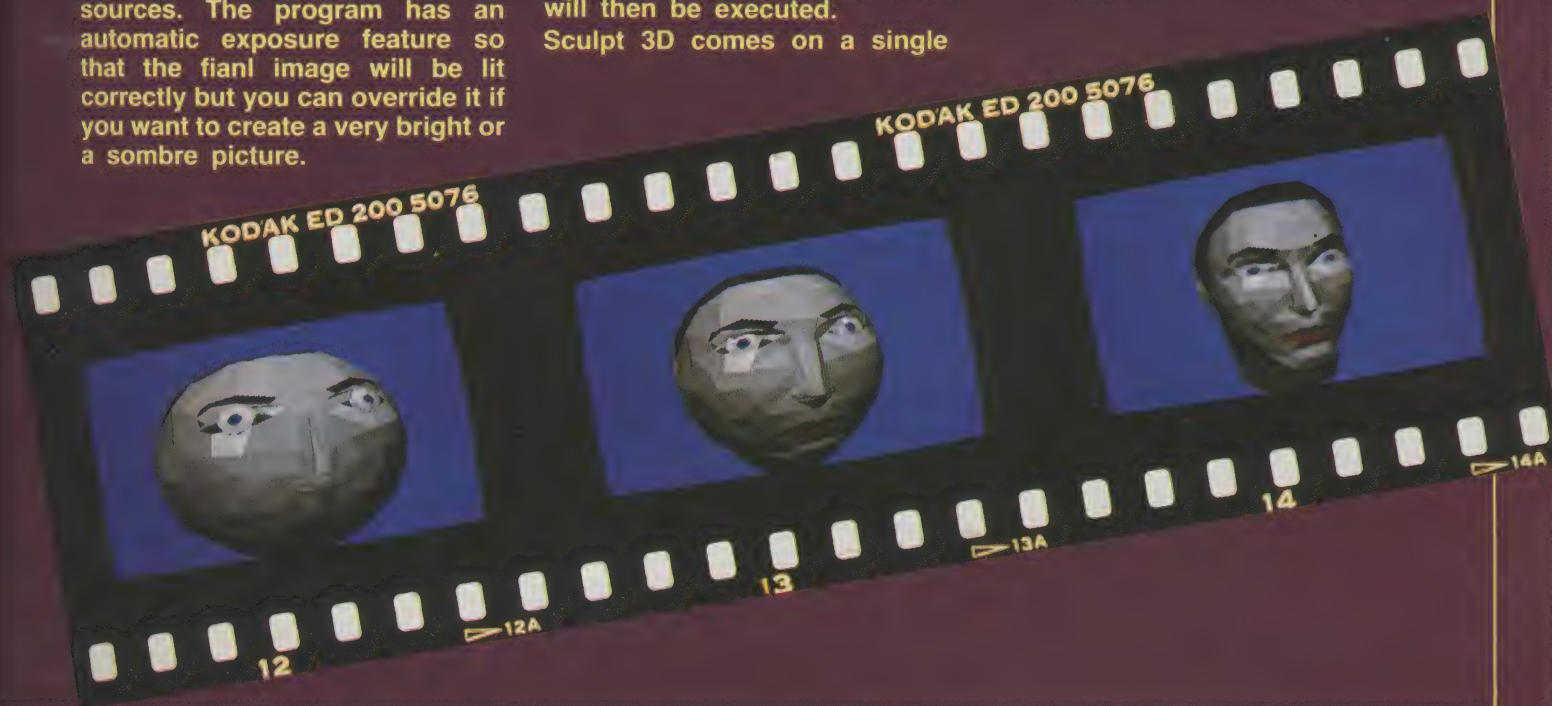
unprotected disk together with a manual that takes you step by step through the program. Animate 3D has a similar manual and is contained on two unprotected disks, one containing the program and the other some sample animations.

The minimum requirement for Sculpt 3D is a 512K Amiga with a single disk drive. Sculpt Animate 3D needs at least 1 Mbyte of memory and will work better with a second disk drive and best with a hard disk. The use of a co-processor such as the 68881 chip will speed up the time taken to generate the final animation but that requires a special version of the program.

*'With Sculpt 3D, you
create a still life.
Animate 3D breathes
motion into it.'*

With Sculpt 3D, you create a still life. Animate breathes motion into it. Those who have mastered Sculpt 3D will have no problems coming to grips with Sculpt Animate 3D, which combines two methods of animation: key frame and global.

In key frame animation you draw the main frames of the animation and the program automatically adds the frames in between. So, in animating a ball being thrown in the air, you could



ANIMATE



draw the ball at the bottom and the top of its trajectory and Sculpt Animate 3D would interpolate the movements of the ball between these two points.

Global animation involves a single scene that remains throughout an animation. Within that scene, there can be objects moving on a path through space, either going from one place to another or rotating at one point.

Paths of motion can be attached to each other so that more complex motions can be built up from simple ones, just as one cog-wheel will turn another, which will turn another.

In key animation, objects can change shape and colour as they move. In global animation they remain unaltered. Global animation is far quicker to create. Once you have defined a shape, it is a matter of seconds to add movement to it. Key frame animation is more cumbersome, since you have to create separate images for each important movement but the results are more spectacular.

'You can add blurring to an object in motion, to make it look more realistic.'

Just as Sculpt 3D uses wire-frame drawings to draw objects, so Sculpt Animate 3D previews animations as the movement of wire-frame images. It uses vertices in a new way – to create curved lines called splines.

A spline is a sequence of edges joined together to form a curve which bends at those vertices that you define as knots. Splines are not simple curves; they exist in three dimensions and can be bent and twisted, depending on the position of the knots, to almost any shape and angle.

Splines can be used to form objects with smooth curves, or to create paths along which objects can move in time and space. Each vertex on a path then represents a different frame in the final animation. In order to create a smooth animation these vertices have to be an equal distance apart.

Paths need not go from one position in space to another. They can also form closed loops to animate objects that return to their starting point. An object can not only move along a path, it can also rotate around it, changing its



orientation at any vertex so that it is always facing the right way. You can add blurring to an object in motion, to make it look more realistic.

Sculpt Animate 3D deals well with one of the main difficulties of animation: moving part of an object while the rest of it remains still. You can define hierarchies to break down a complex object into various parts so that you can specify which part you wish to move. Thus, with a figure, you can arrange its limbs in a hierarchy so that it is easy to move just one of its arms or a hand.

Light-sources and the position of the observer can also be attached to paths. If a lamp moves, it will add moving shadows and highlights to a scene. The motion of an observer can create the cinematic effects of panning, zooming into close-ups or away from objects and of tilting the image.

Both these methods are greedy for memory and may work only if you are using such additional hardware as a video machine that will record your animation one frame at a time.

Animations can be set against a background image created within

the program or by using a paint program or digitiser that produces standard IFF files. You can work in any resolution, including HAM mode.

Sculpt Animate 3D consumes memory – one second of animation may need as much as two

megabytes of data. So a compression technique is used to reduce an animation to a single image together with the data that contains the changes between it and the other frames of animation. It was in this way that Dr Graham's Juggler could be squeezed into 512K of memory.

Only short animations can be shown directly on screen. Longer ones will need to be recorded in segments on video tape or film and edited together. Sculpt Animate 3D will work with such additional hardware as single frame controllers and – when they become available – frame buffers, which generate higher quality images.

Considering its complexity and the excellent results that can be obtained, Sculpt Animate 3D is not difficult to use. Its interface with the user has been well thought out, so that progress can always be checked quickly and mistakes rectified.

It provides facilities for animating solid objects that not so long ago would have been beyond the reach of non-professionals. Animate 3D maintains the high standard set by Sculpt 3D. Together, they form a marvellous combination that offers users endless fascination and immense creative potential.

J.W.

JUMPDISK FIGHTS THE VIRUS

Our theme for the May issue of JUMPDISK is the 'Virus'. To protect your software from the *new strains* you first need to understand how they function. The information we are providing is the most comprehensive and up-to-date published so far. The programs in this issue will, at the click of an icon, enable you to check and protect your software. The Virus is here to stay — there will always be someone trying to develop a new strain that is more dangerous than its predecessor — JUMPDISK will give you the tools to fight back.

JUMPDISK For the AMIGA

For the AMIGA MONTHLY MAGAZINE MAY '88 ON A DISK

PROGRAMS

PALETTE
Tutorial on Loading, Working
FF, LBM Art

VIRUSX
New-Generation Virus Checker

VIEWBOOT
See Boot Blocks To Check
Presence Of Sneaky Viruses

PUZZLER
Make and Solve Jigsaw
Puzzles From IFF Art

A LITTLE FLASH
Cover Animation, Graphics Humor

STAYALIVE
Dice Game Written in C

NOW SHOWING
Technique for Stenboards,
Animations

SPACESHOT
Arcade Game

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Graphics

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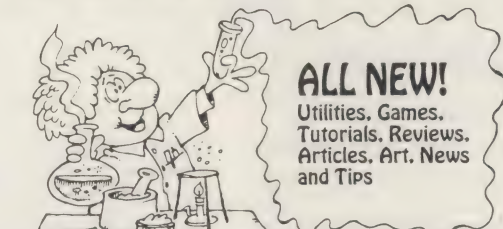
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PUBLIC DOMAIN — LATEST NEWS

Just received from the U.S.A., FISH Disks 129 through 138. They include some very useful programs. Well worth a close look, especially at only £3.00 each

FISH 129 DosKwik: V2.0 of a pair of programs which allow you to save files, or a group of files, to one or more floppies for quick loading (eg. loading up a ram disk). **MRBackUp:** V2.0 of a hard disk backup utility, that does a file by file copy to standard AmigaDOS floppy disks. Includes an intuition interface and file compression. **PaintJet:** An "official" Hewlett Packard PaintJet printer driver received directly from HP sources. **Patch:** Two independent ports of the very useful Unix utility "patch", which applies context diffs to text files to automatically update them. **FISH 130 DirMaster:** V1.1 of a very nicely done shareware disk cataloger. Lots of neat new features and enhancements. **Evo:** A human evolution tutorial. **I/S. Hp:** A nice RPN calculator program that supports calculations with binary, octal, decimal, hex, float and complex numbers. **V1.0 I/S. Mach:** A "mouse accelerator" program that also includes hotkeys, the features of sun mouse, clicktofront, popcli, a title bar clock with a bbs online charge accumulator, and more. **V1.6A I/S. PatEdit:** Pattern editor for creating patterns to input to the Amiga SetAPI macro call. **I/S. OMan:** Mandelbrot generator written partially in assembly for speed. **FISH 131 Dfc:** Copies disks like Maurader, but multitasks. It even has a nice little Intuition Interface. **I/S. HyperBase:** V1.6 of a nice little shareware database management system. **Life:** New version of Tomas's ancient life game but with a new macro language for setting up patterns, some good examples, and some more good stuff. **I/S. Mackle:** Popcli replacement that draws pretty lines on the screen in blanking mode. **I/S. Mgtb:** A version of Mgtb with an ARexx port and other improvements. Finally you can define macros and bind them to function keys in your startup file! **I/S. WFrags:** Another version of Frags, but this one pops up a nice little window that updates occasionally. Necessary for developers who wonder what their program is doing to memory, or wonder why they can't load that program. **I/S. Fish 132 Berserk:** This animation, unveiled at a meeting of the F.A.U.G., got Leo a standing ovation. It's a must see for every user. The difference between this distribution, and the one on disk 100, is that this one includes "source", ie. it contains all the object descriptions necessary to recreate the animation. Thus you can, if you like, try modifying various objects to

create slightly different animations or use it as an example for creating your own. Requires 1 Meg. **FISH 133 Conman:** V1.1 of extremely useful replacement for the standard console handler, that provides line editing and command line histories completely transparent to any application program that uses CON: windows. New features include additional editing keys, fast search keys, undo key, clear history command, and more. **Crc:** Two programs that are very useful for generating 16-bit CRC listings of the contents of disk. **CrcList:** Complete CRC check files for disks 1-128 of the library, using the above Crc program. **OverScan:** Patches the Intuition library so that sizable windows with MaxHeight of 200 (400 in interface) and screens with height of 200 (400 in interface) will take advantage of the PAL overscan capability of Intuition V1.2. This is useful for European users that wish to run software written for the American market, without modifying the applications, but still using the additional space. **I/S. Fish 132 Being Throws:** A 50 frame HAM animation done with Sculpt-3D, and minor touchups with DigiPaint. The animation took about 325 hours or runtime to generate! **Browser:** W/B tool, using text-only windows, that makes all files in the system accessible for executing, copying, moving, renaming, deleting etc. Billed as a "programmers workbench". **V1.2. Dme:** V1.29 of Matt's text editor. Dme is a simple WYSIWYG editor designed for programmers. **I/S. Find:** Utility which searches for files that satisfy a given boolean expression of attributes, starting from a root pathname and searching recursively down through the hierarchy of the file system. **Library:** Demo of a program that stores textual information without regard to structure or content, and allows complicated searching for specific patterns. Written in assembler for speed. **SmartIcon:** Is an Intuition objects iconifier, limited to iconifying windows, still very handy. **FISH 135 TextP:** Selection of 78 TeX fonts with a conversion program to convert them to Amiga fonts. There are 22 different fonts at various sizes, ranging from 15 pixels high to more than 150 pixels. **FISH 136 AsmToolBox:** An assembler "toolbox" created to make interfacing between assembler programs and AmigaDOS easy. **I/S. Blason:** Replacement for unix "yacc" command. **If2Pcs:** V1.1 of an interactive puzzle program. **I/S. Paste:** Version of the Unix paste utility. It concatenates corresponding lines of the specified files into a single output line. **I/S. YaBoingit:** Game demonstrating hardware sprite usage, including collision detection. **I/S. Zoo:** File archiver, much like "arc" in concept, but different in implementation and user interface details. Includes some nice features that "arc" lacks (such as file/path names up to 255 characters in length)

V1.8. FISH 137 Ct: Program to display images from a CT scanner, along with several interesting sample images of scans of real people, including a skull, brain, heart, and spine. **JeanIcons:** Miscellaneous cute icons created for AMUC's monthly newsletter disk. **Munchio:** Cute little program which plays a digitized sound sample when you insert or remove a disk from your drive. If you don't like the sounds you can replace them with your own. **Good fun. Slt:** Update to the Set Icon Type program from disk 107. **VgAd:** New gadget editor that takes two pictures of the window and its gadgets, one being the normal gadget state and the other being the fully selected state, and then merges the data and converts to C source code. **VirusX:** Boot sector virus check program that runs in the background. **VLabel:** program to print fancy customized disk labels. Combines an IFF picture and up to 50 lines of text and then print the result. The IFF picture can be virtually any size (up to 1008 by 1000). Recommended. **FISH 138 AmigaLine:** Technical notes for Amiga programmers. **Diff:** Uses the same algorithm as the Unix diff program and also produces context diffs, suitable for use with patch. **Foreach:** Simple but useful program that expands a wild card file specification. **I/S. MacFont:** Conversion tool to convert Mac fonts to Amiga fonts. **ModuleTools:** Various useful routines for those programming in Modular. **I/S. Vt100:** Two new versions of vt100 terminal emulator. One, based on vt100.2.6, has been enhanced to include an iconify feature, add full 132 column support using overscan etc. The second is release 2.8 of the mainstream version of vt100.

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Stop Press

We will be at the Commodore Show 3-5th. June at our usual stand, No. 32. On sale will be the June issue of JUMPDISK featuring detailed coverage of the Amiga Developers Conference PLUS back copies of JUMPDISK at special show prices. PLUS the very latest Public Domain Disc from USA PLUS software surprises and hardware specials. On show will be the first Amiga JOKE Disc titled "Famous PD Display Hacks" and if you are thinking of buying the Lattice 'C' Compiler please check out our prices. We hope to see you there.

DYNAMIC STUDIO

With his notebook in his hand Paul Andreas Overaa exercises his keyboards with this new integrated music package.

Dynamic Studio is an integrated music software package from NewWave Software. It contains a sampled sound based percussion/drum composer, a 16 track MIDI compatible sequencer unit, a sequence editor and library facilities which allow you to send and receive system exclusive MIDI data. The program comes supplied as a main program disk, a data disk and a reasonably informative A4 sized manual. The minimum hardware requirement is a single drive 512K machine fitted with a MIDI interface although serious users will find a twin drive/1 Meg machine more appropriate.

Dynamic Studio's drum program lets you produce percussion accompaniments. Because sampled sound is used it is possible to create your own drumkits using any IFF sampler device. You can interchange samples from one drumkit to another and can use sound samples of anything you care to imagine. Any single drumkit can consist of up to ten different 'drums'.

Using the 'drummer' is quite easy. It has facilities for creating, editing, deleting and saving patterns and for linking individual patterns into 'pattern groups' and whole 'songs'. Up to 20 individual

drum patterns can be used at any one time (i.e., in any single song). Like many such programs you are given the choice of writing in real time or in the, sometimes more useful, pattern editing mode. The editing facilities are well thought out. It is possible to control such things as the time signature, quantizing level, beat accent, drum (sample) volume and pitch. The drumkit can be arranged anywhere on the Amiga's four sound channels and the only restriction in this

"You can record up to four music sections of any length on a single track"

area is the one that always applies to Amiga drummers no two drums may be played at the same instant on the same Amiga sound channel. This limitation can occasionally be used to advantage when you need tight open/closed high hat patterns. Dynamic Studio's drum program has some nice extras including a 'randomizer' control which enables you to randomly vary the

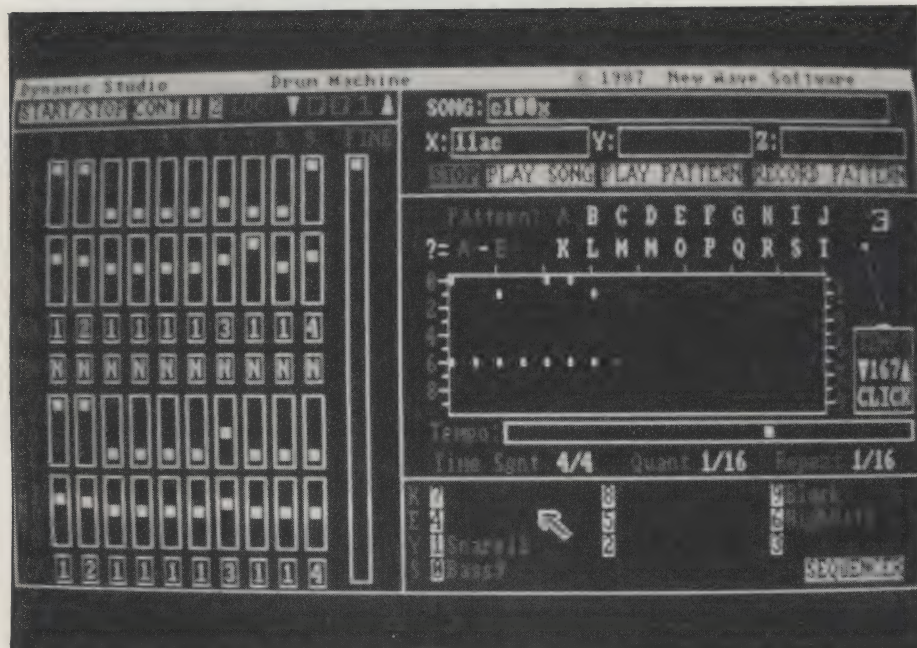
volume and tuning levels of any given drum. Also useful is the ability to control the drumkit using external velocity sensitive MIDI data.

Perhaps the most interesting part of the Dynamic Studio package is the sequencer unit. This is a 16 track 'tape recorder' for recording MIDI information. Each 'track' consists of the MIDI data, an optional name, the channel and time signature information and the sequencing pattern data. You can record up to four music sections of any length on a single track and these are labelled A, B, C and D. The sequence is then created by providing a list of the sections to be played indicating repetitions and rest bars. If you split your songs into arrangements like 'into A' 'verse B', 'chorus C', 'end D', then a song form such as..... 'into, verse, chrs, verse, chrs, chrs .. end' would be written as the sequence A B C B 2C D. This arrangement makes the addition of extra choruses etc. to a song very easy indeed.

Tempo can be adjusted both before and after recording the data and individual tracks muted for selective playback. The drum programmer can be used to provide anything from a dull drumkit to just simple metronome facilities during recording.

As far as the serious musician goes the sequencer facilities are good. You can specify start/end locations so that recording starts at a predetermined point in your song, you can re-channel MIDI data after it has been stored, filter out such things as system exclusive, pitchwheel and program change data. Track to track copying, merging and additional filtering facilities are also available — you can even transpose entire sequences.

In addition to the above facilities Dynamic Studio's sequencer includes many more 'goodies' that confirm that Dynamic Studio is expected to be used. Try some of these for starters Randomizing facilities, note rechanneling between selected range limits, individual time shifting of tracks, sequence reversal, automatic note scramble (rearrangement), MIDI echo creation, data thinning, selective MIDI Thru control and external synchronization.



DYNAMIC STUDIO

Editing a sequence can be achieved by two approaches. The first method uses a graphical mode which allows you to display a sequence, target a particular 'note' by pointing and 'clicking' on it, then perform an edit operation on it. This is straightforward for most editing requirements but for those awkward times when you need to add, remove or change specific MIDI events a more complex Text mode is available which allows you to edit event information in its raw hex form.

The other facility provided by the Dynamic Studio package is the Librarian. This allows you to store system exclusive information from your MIDI units and download it to the appropriate devices as required. It is a straightforward facility to use and just helps make life that little bit easier.

Conclusions

During the week in which Dynamic Studio was available to us we used not only our own MIDI gear but filled a studio with as much additional equipment as we could beg, borrow or steal in order to experiment with the package.

What can we say? If you've got a MIDI interface and a synth you will, like us,

have great fun with Dynamic Studio. The sound quality on the Amiga is relatively good and if you want to experiment with sampled sounds for percussion accompaniment or 'home recording' etc., then the sound Studio/-Amiga/MIDI combination works well.

If your needs are more demanding i.e., if you have a semi-pro or professional interest in music/MIDI software then, as usual, the story changes somewhat. Amiga sound synthesis does NOT approach that needed by serious amateur and professional musicians except in the arguable case where you are limiting synthesized output to single note bass-lines and the like. In practice the plain fact of the matter is this..... the more you try to do with the Amiga sound chips the more you (the musician) will notice the quality gap. There is no doubt that the potential usefulness of Dynamic Studio's drum facilities are limited by this fundamental hardware characteristic. The drummer handles IFF format sampled sounds and this is its saving grace.... it is, through no fault of its own, more likely to find use as a means of providing additional percussion and sampling effects rather than acting as a primary drum kit.

The sequencer unit provides the magical MIDI link which enables us to lose the 'Amiga sound dependence' completely. Start putting DX21s, DX7s, Tone generator units etc., at the other end of the MIDI lines and you can then get the sounds you want. Dynamic Studio's basic editing facilities are straightforward but the more advanced sequencer/editor options do take a little while to get used to. But the time spent is well worth the effort — what we really would have liked would have been a couple of months to experiment.

"The musicians amongst you will soon be glad you did not buy Atari STs."

The MIDI software for the Amiga has up to now been a bit 'thin on the ground'. Things are now beginning to change and the musicians amongst you will soon be glad you did not buy Atari STs. Dynamic Studio is one of the new packages arriving which reflects this change. If you are a musician and in the market for Amiga MIDI software then this is one package that you really should include on your shortlist.

P.A.O.

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AMIGA IN EDUCATION

Commodore is making a wholehearted bid for a share of the educational computer market with the full range of PC and Amiga machines, backed by a nationwide network of specialist dealers.

At the same time, the company is launching a drive among software developers to expand the already comprehensive catalogue of graphics, CAD and DTP products available for the Amiga 500 and 2000 machines.

Amigas have already become widely used in colleges of art and design and for CDT teaching in UK secondary schools, as well as by professionals in a variety of graphics-orientated businesses such as graphic and fabric design, CAD and video production.

The Amiga caused a considerable stir at the recent National Student Television Conference at the University of East Anglia. Delegates were particularly impressed with its high-resolution graphics and the stunning visual effects produced by widely-available software such as Digi Paint.

Price is the other factor that is expected to win the Amiga a growing share of the educational market. For example, the powerful Amiga 2000 with high-resolution colour monitor is available to educational purchasers for £999 + VAT – 30 per cent below recommended retail, and less than half the price of comparable machines.

Transforming video production work at the Polytechnic of North London the Amiga has, in the words of John Carter head of Media Service "brought the long-awaited video revolution to our doorstep".

Until it acquired the Amiga, the college had made videos either by shooting in a studio using two cameras linked by a vision mixer, or by using the "shoot it once in a long shot and then again in close-up approach". Both methods result in U-Matic original tapes, which needed varying degrees of editing on the college 2-machine edit suite. Unable to afford a video caption-generator, captions were made by hand for

studio productions and superimposed over live video via a camera and the vision mixer. This method proved time consuming and had the added disadvantage of being impossible to engineer on location.

Providing the college with a very cost-effective alternative using the Amiga with an edit suite is a simple matter of connecting the Amiga between the source and master machines. Using the Senlock, the background colour on the Amiga monitor becomes transparent and the original recordings play back through it.

Software

Software packages available for use with the Amiga include TV Text, the captioning package with a range of fonts available in 8 colours in medium or high resolution.

Along with the software and digitising camera the Amiga 1000 cost the college less than £3000 and, as John Carter says, gives those involved in



Amiga 500 computers in Swansea University

making video programmes on a restricted budget "an affordable means of competing with our rich uncles in the facilities houses".

Circuit Design

Swansea University now has 45 Amiga 500 computers in its computer science department, 30 of which are used in the classroom by the students. The machines have a dual purpose within the university, both as a stand alone workstation for graphics, student theses and programming in Modula 2.

Two classes of students use these machines: computer scientists and

civil engineers. Within the Computer Science department the Amiga is used for very large scale integration (VLSI) circuit design.

Other areas in which the Amiga is being used are in the Geology departments within the Royal Holloway College; Reading University uses the Amiga for teaching purposes; Somerset County Council has recently installed an Amiga into every school in the county; various art colleges have the Amiga, including the Royal College of Art where it was used to design an ideal home. Fine art students at West Surrey College of Art and Design are finding the Amiga an economical way of mixing colours, saving outlay on oils and other materials. Architects at the Architectural Association are finding the Amiga's ability to work in three interfaces useful for generating architectural perspectives.

MSDOS Too

PCs including the powerful new 386-based PC 60/40 and PC 60/80 are also being targeted for the education field.

Peter Talbot, national sales manager of Commodore's educational division, maintains that the Amiga has a particularly strong appeal.

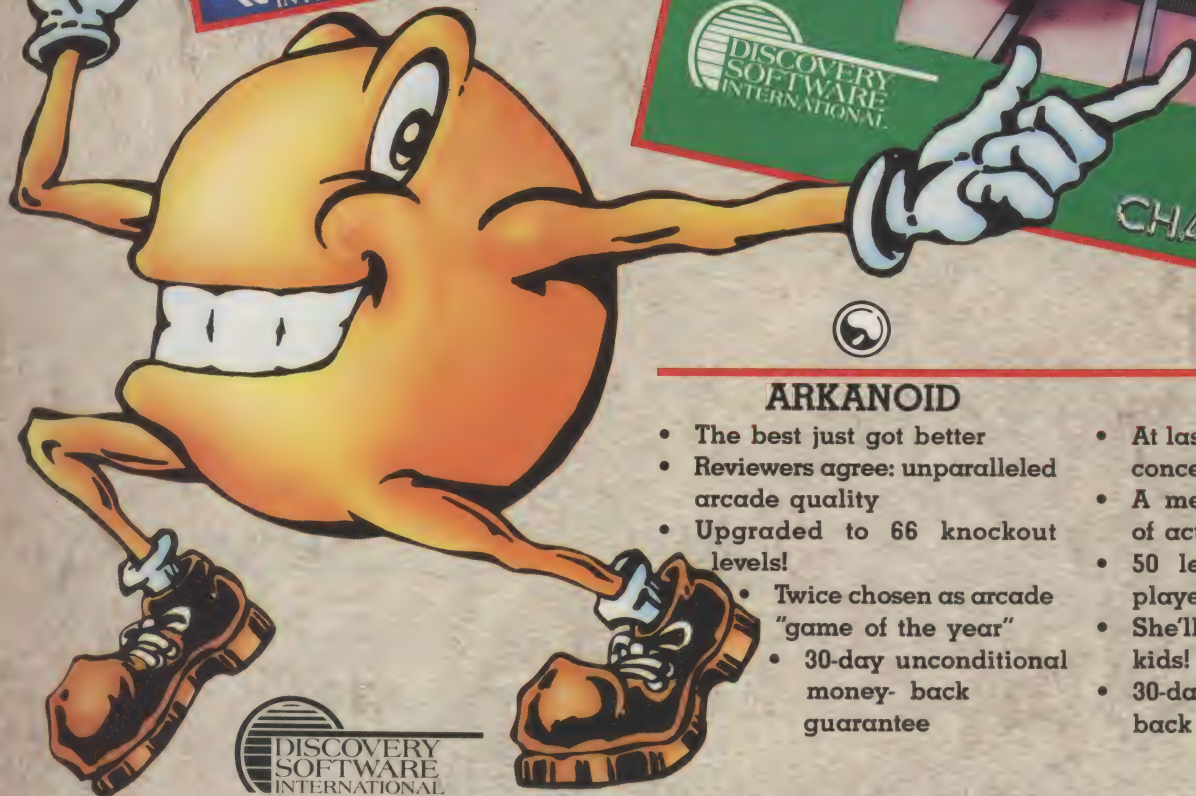
"We know from those educational establishments that are using them that the Amiga has a unique niche in the market. It is the only machine that bridges the gap between school and home. I don't believe that any manufacturer currently supplying to education can match what the Amiga offers to the teacher, the student and the parent.

"Now we have a highly competitive price structure and a network of dealers to provide the necessary service and support, I believe that Commodore is ready to make a real impact on education in this country – as we already have in the United States and elsewhere in Europe."

Commodore is currently running a series of roadshows at universities and polytechnics to demonstrate the Amiga's capabilities to art and design staff.

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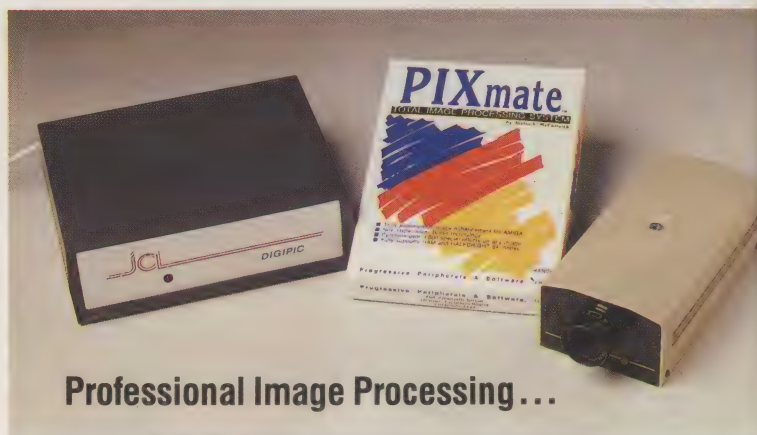
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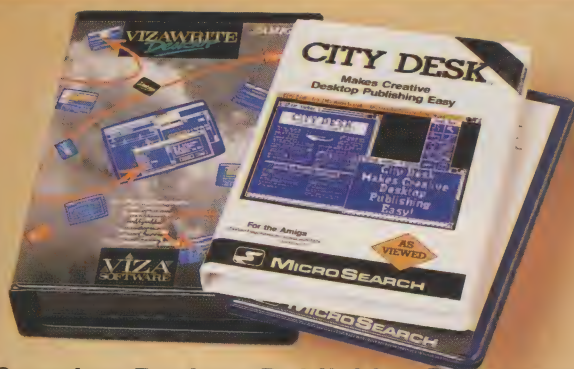
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JAY MINER

'The father of the Amiga'



'The father of the Amiga' – the man most credited with its initial development gives A.U.I. an exclusive interview in which he tells how the computer came into being, says some very tough things about how it nearly never happened, and predicts what may come next.

I completed six months of Electronics Technician School in the Coast Guard, and then I spent three years on Coast Guard in the North Atlantic Weather Patrol repairing radars, radios and also the Captain's Hi-fi. That's how my interest in electronics got started.

After the service I studied engineering. I graduated in 1958, with a major in the Design of Generators and Servo Motors.

The first thing, however, that I was asked to do after graduation was to design a Computer Control Console with a Video Display, I

had to teach myself transistor circuit design and logic design out of the few books which were then available. This was an advantage however since it was easy in those days to learn enough out of one book to become the company expert.

In 1964, I went to work for General Micro Electronics, the first spin off in Fairchild devoted exclusively to MOS chips. Again it was easy to become an expert in this field, because the field was so new. We designed sixty-four of their chip register chips and the world's first MOS Calculator with twenty-three custom chips.

In 1974 after ten years of calculator, watch and computer chip design at a lot of different chip companies, Atari was just starting up and needed a chip designer. My friend Harold Lee was already there and he introduced me to Nolan Bushnell (*The founder of Atari*) Harold had done the chip for the first video game and Nolan Bushnell asked me to do a chip for the new video game twenty six hundred system. You probably know how successful the twenty six hundred or the Video Computer system as it became called, so in 1977 they asked me to design the new Atari computer the 400 – 800 model. I directed the architecture

and the chip designing of this new machine and this too was a huge success.

The year was 1979 and Atari was rolling in money. However, they made a decision to write off all of the development costs in that first year production. This allowed them to show just enough profit that year to not quite trigger the bonus payment they promised to the engineers and programmers. The chief programmer on the projects name was Larry Caplin and a half a dozen of his team went off to start Activision.

This was the beginning of the end for the old Atari however, I wanted to do an advanced sixty-eight thousand machine at that time to compete with Apple but Atari decided that they did not need another computer. They decided not to pay the bonus they promised me and the engineers. So I quit, as did nearly all of the engineers and programmers. Atari then started to produce a bunch of junk cartridges, thinking that the public would buy anything I guess, I blame them in large part for the crash in the video game business that happened a few years later. I spent the next three years in a chip company called Zimast doing special purpose computer chips for heart pacemakers.

It was in 1982 that the programmer I mentioned earlier, Larry Caplin, called me up and said he was unhappy with Activision and did I know anybody with money who could help him start a company. Most people don't know but it was actually Larry Caplin who started AMIGA although it was not called AMIGA then.

'I was Vice-President'

I introduced Larry to my boss at Zimast, Bert Braddock, because he knew people with money and how to make a business plan. He leased an office in Santa Clara and found a chief executive officer, a vice president of marketing from Tonka Toys; Dave Morse.

Larry was going to design the games and I was going to design the chips and Zimast was going to build chips and all of us would prosper.

Well, things weren't going fast enough for Larry Caplin, so he bailed out, leaving the offices, a business plan, and financing. They had the money and a chief executive officer, but no engineer or programmer; the financial backers still wanted a video game company, so Dave Morse asked me to take Larry Caplin's place. This meant leaving Zimast. Dave

Morse was President and I was Vice President.

I had wanted for years to build a super personal computer based around the Motorola sixty-eight thousand micro processor. Atari had turned me down and here was my big chance, as long as it could be sold in a stripped down, low-cost version for video games. Dave Morse and the financial backers were happy. As long as it was unlimited in its expandability as a high level home personal computer, I was happy. My goal was to design a low cost computer that could do good flying airplane simulations. My friend at Singer Link, Al Pound, had shown me the real million dollar simulators and I was hooked. I had to have a low cost version of that to practice on at home.

I read about blitters in one of the computer magazines and this seemed the ideal low cost way to improve animation such as flight simulators. Also, since good sound was important to both games and flight simulators we put in four independent VMA sound channels. Dave Morse hired some marketeers and manufacturers to pursue the video games business and joystick, joy board and game cartridges, while I started hiring a technical team to design the chips. This meant that the early AMIGA was really divided into two parts, one part devoted to the video game business such as joystick and joy boards, that was one half of the company, the other half of the company was in the backroom where I was in charge doing the chip design for this new computer.

I drew several sketches for the outside of the computer showing a large IBM style box with lots of card slots and a large IBM keyboard. Dave Morse had his own ideas about what a computer should look like and he felt that the card slots were too expensive for the machine he wanted to sell.

'go after IBM'

It was my biggest regret that we did not go after IBM right from the start, I know that sounds weird. But really IBM was very vulnerable just then in the PC market, they had no colour or sound and could only address 640k memory. We had a much better machine and a much better processor.

Dave Morse was insisting however, probably because of the investors, that we make as low cost a game type machine as possible; even though the only computers that had done well at that time were ones with card slots, such as the Apple and IBM. This was probably a good decision in retrospect, since Commodore was not at all interested in a high level machine and most likely would not have purchased AMIGA otherwise. So there we were de-

signing this super graphic computer with four blitter channels, eight sprites and four sound channels and the bottom just fell out of the video game market. This killed the joystick half of the company, and the cartridge market and that half of AMIGA started losing money fast.

The computer was still buyable as a personal computer and the work continued, but with severe financial restrictions. It seemed like we owed money to every supplier in town. I had to mortgage practically everything I owned personally to help meet the company payroll. Steve Jobs of Apple came around several times to look us over but he never actually made an offer to help us. He felt we had too much hardware, even though it was all integrated in three chips. Atari wanted to use our chips for their computers and they loaned us some money while they were negotiating the licensing agreement. They got real tough however just about the time that Tramiel was buying Atari.

Commodore came along then and bought AMIGA and saved us. Commodore was very good for AMIGA in the beginning. They made many improvements in the chips. Commodore made a lot of improvements in the things that we wanted but we did not have the resources to accomplish. The AMIGA originally only had three hundred and twenty colours across the screen, even in the six forty mode. They helped us put in full colour in the six forty mode. They also improved the colour by moving the NTSC converter off the chip. They paid off our creditors including my loans to the company and they got us a beautiful facility in Los Gatos and most surprising in 1984, sent the entire company including wives and sweethearts out to New York for a grand AMIGA launching party at the Rockefeller Centre here in New York City and what a party that was, tuxedos, champagne... all just to launch a computer. They really did it top notch. For me the most honourable thing about launching a new computer like this – and this was my third – is seeing what the software experts do with it years later.

The Hold and Modify feature of the Amiga was left over from the time the NTSC television conversion was on the chips. I almost took the HAM off the chips since it wasn't very useful with RGB colour. Well, look what Digiview has done with HAM. Another feature that really tickles me is the design of developers tool by Thomas Rökkiki, such as the one called Blitlab. This is a mouse visual control panel for the blitter. The blitter and line draw control registers are all shown there on the TV screen as well as a memory map

that shows you exactly what the various blitter commands do. It even tells you when you try to set an illegal memory move with the blitter. Things like that are just great!

What happened to Amiga, the company?

Well, it's a very sad story. You all know that CBM got into real financial trouble after they took over the Amiga. The sales of the 64 slumped, they had lots of Plus/4's and other stuff left over from the Tramiel era and the sales of the Amiga didn't zoom up as fast as they had hoped, though it sold as many as the Macintosh did in its first period. There weren't enough sales to cover its expenses. The Bank insisted that Commodore cut its expenses. So it cut heavily into the engineering facility in Westchester and also at the Amiga facility in Los Gatos. A 70% or so cut in engineering in Westchester still left 50 or so people in engineering but similar cuts at Amiga left only ten. People started giving notice and quitting but Commodore stuck to its policy of no raises and no replacements. In spite of very limited manpower, we managed to finish the 1.2 software release; and design a revised set of custom chips for the next generation of Amiga computers.

Amiga did all these things not Commodore

Then Commodore laid off more people in Los Gatos and closed Los Gatos. Let's face reality, Los Gatos was a very expensive place to live. We had to pay 25 to 50% more to get good people. And our rent per square foot was twice what Commodore paid in Westchester. Commodore didn't like paying gobs of money to support Amiga when their German and Westchester design teams could design better boxes faster and cheaper. Those teams promised to have the 500 and the 2000 ready by September – that's September 1986. Both of those machines used the chips and software that Amiga designed. But they were still more than a year late. Commodore refused to cost reduce the 1000 line. Because in my opinion, they didn't want a low cost 1000 to compete with Westchester's keyboard-attached 500. They cancelled the original Amiga 2000 being completed in Los Gatos in June of 1986. Because it only had two IBM card slots instead of three and the Amiga slots were not shaped enough like IBM cards. Commodore were convinced that their 500 and German-made 2000 would be ready by September '86. So why advertise the 1000 when there wouldn't be any around soon? So an entire year was lost while there was no advertising and no PR for the Amiga, no push to sell 1000s. But

IBM and Apple used that year to good advantage. They both have colour and sound and are even close to getting multitasking. I can't tell you how angry it makes me feel to see how the Amiga was handled. The advertisements they did have were absolutely awful. Old men changing into babies and kids competing in race cars. It was ghastly. And then a full year with no ads at all. They lost dealers and worst of all they lost public awareness. I am happy to say that things are changing now and things seem to be shaping up.

Now we have the 500 and the 2000.

What comes next?

Everyone agrees that the next step is more resolution, more computing power, more graphics engines and more memory. More resolution means up to ten twenty four across the screen. More computing power means bigger engines, probably from Motorola. And more memory is obvious and there is going to be better and better software.

'Video RAM'

Commodore now has a high resolution chip set of Amiga chips that I worked on when we were with Amiga in Los Gatos. These chips use video ram and can produce a very high resolution ten twenty four display along with the present Amiga display simultaneously. They increase the display address range to two megabytes. These chips are completed and tested and only require a computer and memory to hold them together. I'd like everyone to know that Amiga in Los Gatos designed these chips! These improved Amiga chips can use a new type of ram called video ram. This new type of ram – video ram – is a giant step in computer improvement because it frees up to the bottleneck into memory caused by competition between the computer itself and the memory fetchers required for the high resolution display. Imagine having an additional gigantic parallel output port thousands of bit wide, just for video. You wouldn't have to access it very often to dump a lot of memory data to a video picture.

The way it works is the video data for the high resolution display is dumped from memory into a large parallel to serial shift register right on the video ram chips. This outputs hundreds of picture bits – pixels – in one memory cycle, leaving 99% of the memory band width for the computer. This is critically important for very high resolution multibitplane colour displays.

Video ram can also be used for other things than video. It can provide a very fast path to hardware parallel processors; such as blitter and all kinds of I/O such as audio, hard disk and networking

continued on page 64

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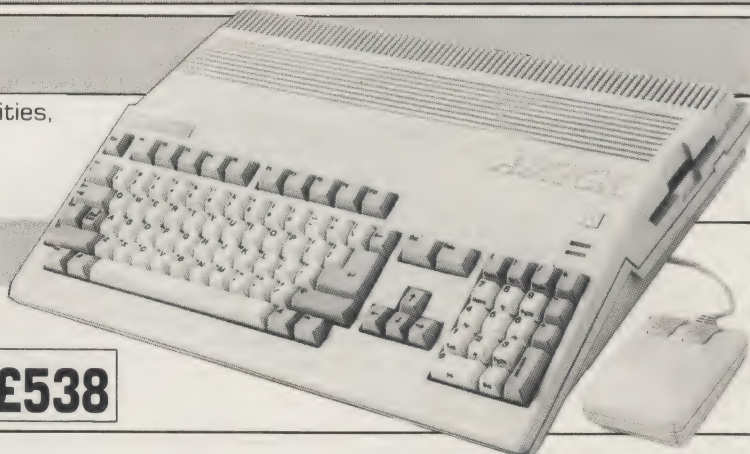
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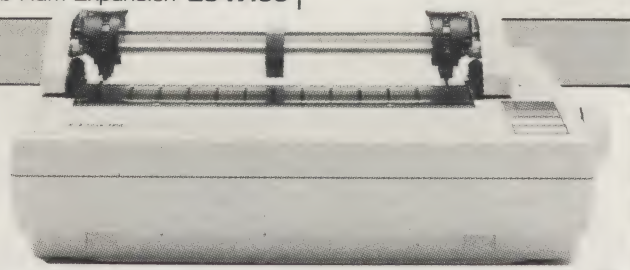
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AMIGA PROGRAMMING

USING IFF BODY DATA

One of the best ways of coming to terms with the rather complicated arrangement used for the Amiga's display is to experiment with it. In previous issues we have looked at the structure of IFF interleaved bit map data and discussed how AmigaDOS routines can be used to load such data-files into a temporary buffer area. The question that we have yet to answer is perhaps the most important one.... 'How do we use this IFF data to actually display a picture on the screen?' This month we look at this last problem and explain the steps involved.

Perhaps the safest way to experiment with screen handling routines is to set up a 'custom screen' with its own bitmap. This gives you access to screen memory that you can use as you wish without running into too many problems. To create such a screen you need to set up the appropriate 'NewScreen' structure, initialise a BitMap structure and then ask Intuition to open the screen for you. The NewScreen structure, used by Intuition to collect the parameters of your proposed display, has the following layout:

```
struct NewScreen NewScreen= {
SHORT LeftEdge, TopEdge, /* left edge is not used, set to 0
*/
SHORT Width, Height, /* pixel width and pixel height of
screen */
SHORT Depth, /* identifies the bitplane depth */
UBYTE DetailPen, BlockPen, /* Colour register numbers for pen
colours */
USHORT ViewModes, /* Display resolution/sprites etc.
*/
USHORT Type, /* Flags identify screen type */
struct TextAttr *Font, /* Pointer to TextAttr structure */
UBYTE *DefaultTitle, /* Pointer to NULL terminated
string
*/
struct Gadget *Gadgets, /* Gadgets */
struct BitMap *CustomBitMap, /* Pointer to a BitMap structure for
the screen */
};
```

The first five members of the structure provide the top left screen co-ordinates, the pixel screen size and the number of bitplanes. This is followed by detail and block pen colours. The ViewModes variable is used to hold flags which specify such things as high-resolution, interlace or dual playfields display modes and by placing a NULL here Intuition gives us the default 320 pixel width non-interlaced screen. The Type variable tells Intuition what sort of screen is

being created — we will need to set this to CUSTOMSCREEN+CUSTOMBITMAP so that Intuition knows that we are going to supply both our own bitmap structure and its associated screen memory.

Font is a pointer to a TextAttr structure which defines the characteristics of the Intuition managed text appearing in the screen. By setting Font to NULL the screen (and any windows that open in it) will get the default font as specified by Preferences.

DefaultTitle is a pointer to a NULL terminated string which will be used as the screen title. Put a NULL in this field and you will just get the blank title bar. At the present time non-system screen gadgets are not supported ... so the Gadgets field should be set to NULL. The last field in the NewScreen structure is a pointer to a BitMap structure, in other words it is our BitMap structure's address.

"At the present time non-system screen gadgets are not supported."

The instance of the NewScreen structure is ONLY used by Intuition to actually open the screen, after the screen is open it can be discarded. What in fact occurs is that Intuition uses the information provided by the NewScreen structure to build a somewhat more complex 'Screen' structure which is then used by Intuition to manage the screen. Part of the main Screen structure includes a BitMap structure and this, amongst other things, contains a set of pointers which give the starting addresses of the actual bitplanes used in the display. When we specify the CUSTOM-BITMAP flag in the NewScreen structure we effectively say to Intuition 'don't bother doing anything about a BitMap... we'll give you one ourselves'. In other words it is up to us to set up this BitMap data prior to calling Intuition's OpenScreen() function: The C definition of a BitMap Structure is as follows:

```
struct BitMap {
```

Two things must be done to perform the initialization: firstly we call a library routine InitBitMap(). This takes four parameters..... the address of the bitmap,

the number of planes to be set up, the plane bitwidth (to nearest WORD above) and the number of scanlines and installs them in the BitMap definition. A typical C call is this routine takes the form... InitBitMap(&BitMap, NumberOfPlanes, width, height);

```
UWORD          BytesPerRow;
UWORD          Rows;
UBYTE          Flags;
UBYTE          Depth;
UWORD          pad;
PLANEPTR       Planes(8);
};
```

This call does NOT initialize the bit plane pointers — we do this ourselves using the AllocRaster() library routine which allocates chip memory for use as display memory.

AllocRaster() requires that you provide the width and height of the display as parameters and it has to be called as many times as the number of bitplanes needed. Each time the routine is called it provides, if successful, the start address of a bitplane memory area. These addresses are used to set up the Planes() vector in the BitMap structure. The best approach is to use a loop to perform this allocation/assignment.

Here is some typical C code that performs the necessary operations. First the loop with just the essential details:

```
for(i=0;i<bitplanes;i++)
{
BitMap.Planes(i)=(PLANEPTR)Alloc-
Raster(pixelwidth,pixelheight);
}
```

What's wrong with this code? Nothing ... until the time the AllocRaster() routine fails because it cannot give you the memory you wanted. The safer alternative is to check within the loop to see that the pointers returned by the raster allocation routine are 'non NULL'. If a problem occurs it is necessary to de-allocate any bitplanes that have already been set up and this is done using a de-allocation library routine called FreeRaster(). We end up with the final code looking like this:

```
for(i=0;i<bitplanes,i++)
{
if(BitMap.Planes(i)=(PLANEPTR) Alloc-
Raster(pixelwidth,pixelheight))==NULL)
{
```



```
for(j=i-1;j>=0,j--)
{
FreeRaster(BitMap.Planes(j),
pixelwidth,pixelheight);
}
i=bitplanes;error-flag=TRUE. /* force
exit from 'i' loop */
}
```

For most mortals this can all seem a bit too much like hard work so you'll be pleased to know that once we have dispensed with these preliminary chores, and have a properly initialized NewScreen, BitMap structure and the necessary display memory, we can ask Intuition to open our screen with a straightforward OpenScreen() call

screen=OpenScreen(&NewScreen);
If the screen opens successfully a pointer is returned which is the address of the custom screen's 'screen structure'. This pointer should be checked to ensure that it is not NULL (a NULL value would indicate that Intuition was unable to open your screen). A valid screen pointer should be preserved..... Many library calls will require that this pointer is available and in fact when your program finishes it has to provide Intuition with this pointer in order to close the screen.

It is now possible to write directly into the screen memory pointed to by the bitplane pointers. If you want to use

Intuition's gadgets and menus facilities you can — but it has to be done by opening a window in your screen. If in fact you open a full size borderless backdrop window in your custom screen you have the whole Amiga display to yourself, have access to all the gadget and menu facilities and can directly manipulate, i.e. write to, the screen's memory area as well if you so wish. A word of warning though ... if you are careless these types of techniques can result in 'trashed gadgets' and other nasties. The 'polite' term used in the manuals for such screens is that they are 'application managed' ... what Commodore actually mean is that if you get it wrong it's down to you!

For now though the important point is that to display the IFF pixel data you simply transfer it from the buffer locations to the screen's bitplane memory. The trick is to read the BODY chunk data of the IFF picture row by row and transfer it to the appropriate bitplane locations de-interleaving it and decompressing it (if needed), as you go.

To finish let us take just one example using the UnPackRow() routine shown in April's issue of AUI. This routine takes the address of the source pointer, the address of the destination pointer and the byte width of the bitplanes as parameters. It then reads enough source bytes to decompress ONE row of a

bitplane and transfers it to bitplane memory updating the source and destination pointers ready for handling the next row of data. Be very careful NOT to pass the actual bitplane pointers from the BitMap structure to this routine because it actually modifies the source and destination pointers passed to it — copy the bitplane pointers to another array and use that instead.

Providing the width, height and depth characteristics are suitable the data can be transferred from the BODY chunk within the buffer to the bitplane memory very easily. If BODY p holds the start address of the IFF file body data and Planes Copy() is the duplicate of the bitplane vector then the transfer of ByteRun1 compressed data can be achieved like this:

```
for(i=1;1<=scanlines;i++)
{
for(j=0;j<bitplanes;j++)
{
UnPackRow(&BODY p,&Planes Copy(j),
bytewidth);
}
}
```

That then completes our somewhat brief account of what a program must do in order to use IFF interleaved bitmap picture data. There is no doubt that the biggest obstacle is 'getting it working the first time'.

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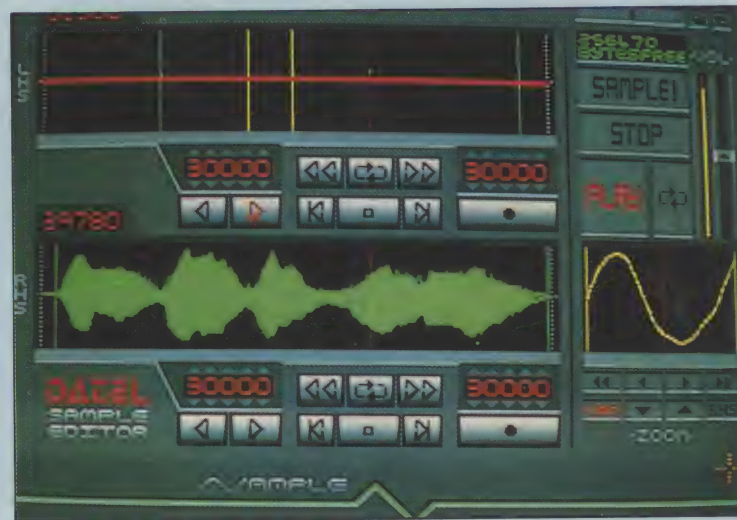
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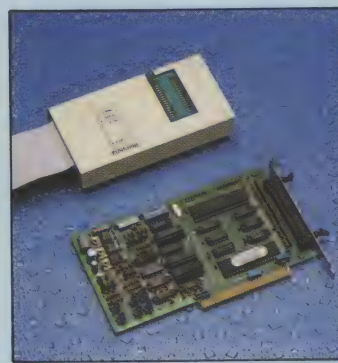


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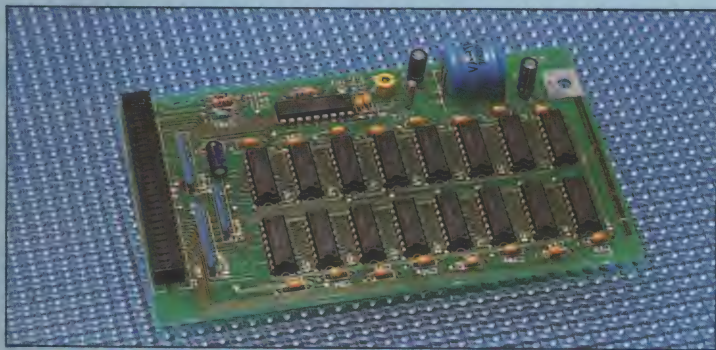


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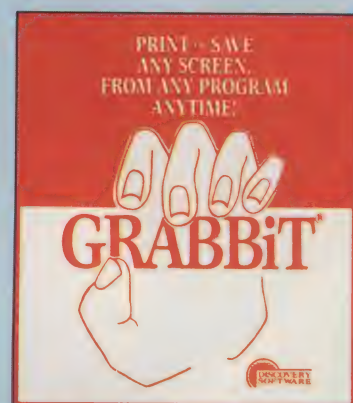
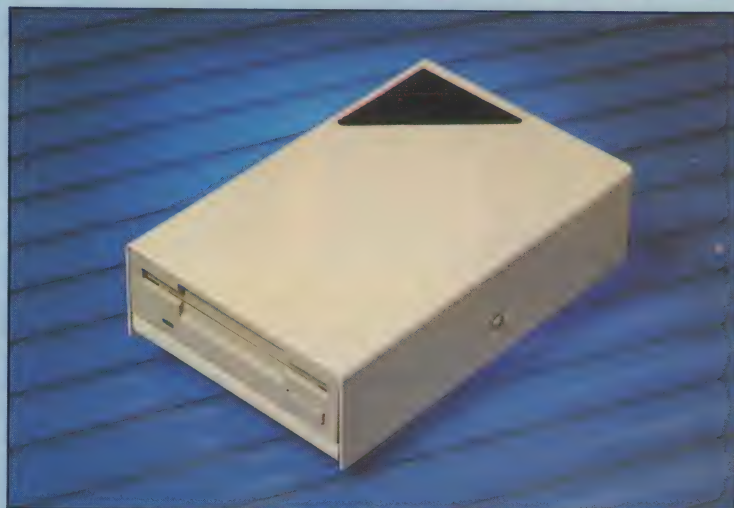


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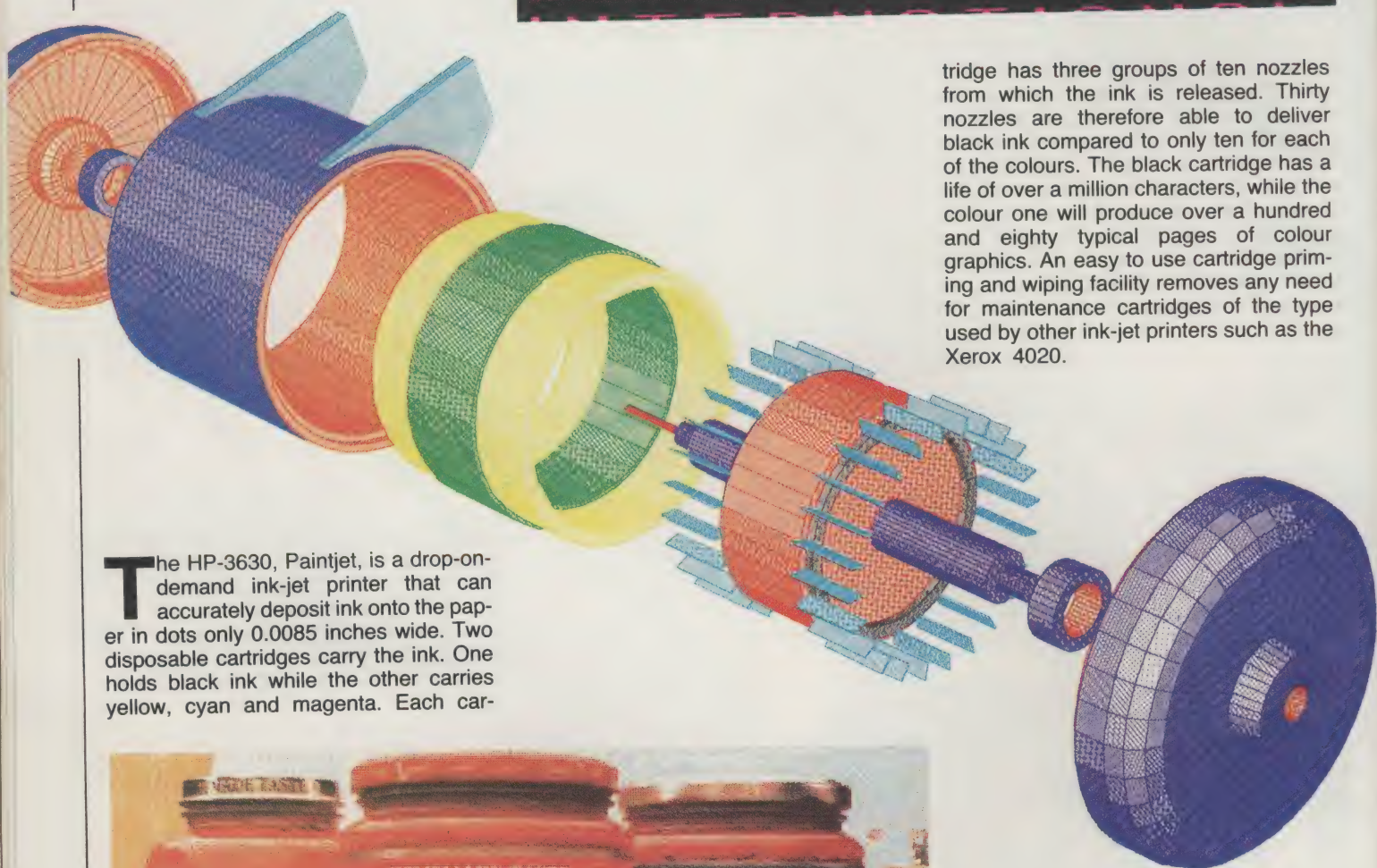
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HP-PAI

AMIGA USER



The HP-3630, Paintjet, is a drop-on-demand ink-jet printer that can accurately deposit ink onto the paper in dots only 0.0085 inches wide. Two disposable cartridges carry the ink. One holds black ink while the other carries yellow, cyan and magenta. Each car-

tridge has three groups of ten nozzles from which the ink is released. Thirty nozzles are therefore able to deliver black ink compared to only ten for each of the colours. The black cartridge has a life of over a million characters, while the colour one will produce over a hundred and eighty typical pages of colour graphics. An easy to use cartridge priming and wiping facility removes any need for maintenance cartridges of the type used by other ink-jet printers such as the Xerox 4020.



The paper transport can handle both fanfold and single sheet stationery up to a width of eight and a half inches using both sprocket and friction feed. It can also use single A4 transparency sheets. On the test model a DIP switch at the rear set the default paper length to either metric (12 inch) or English (11 inch). Although most types of paper will work with this printer, best results are obtained with a specially absorbent type available, at a price, from your local Hewlett-Packard dealer. In the manual it is recommended that you only use extra-absorbent transparency film, also avail-

PAINTJET

able from Hewlett-Packard.

The printer can be supplied with any one of three single interface options; centronics, IEEE-488 or RS-232. Each of these comes with an 8K printer buffer. The centronics interface would seem to be the most suitable for use with an Amiga. It is located at the rear of the printer together with the power socket and defaults DIP switch. The DIP switch is used to select the default character set as well as the paper length mentioned earlier. A lead from the separate transformer plugs into the power socket. I must say that I was surprised to find a separate power supply on a printer of this high quality. For me, it cheapens an otherwise extremely presentable, quality machine.

An Amiga coloured, four inch high, case with a footprint of around twelve by eighteen inches give the Paintjet a most attractive appearance. A membrane covered control panel on the top-left contains four switches and two LEDs. There is a power switch with its associated LED and three other switches to control the paper-feed. The second LED indicates form-feed errors, such as an out-of-paper condition. The paper controlling switches give line feeds, form-feeds, and set the top-of-form. Used at power-on they also start the self-test and switch the printer into transparencies mode. One feature, missing from this printer is an out-of-ink indicator; Not a serious problem but it would have been useful.

Sending the appropriate escape codes will select a primary and alternate character set from a choice of twelve. I was a little disappointed to discover only two fonts. Courier font is printed at a constant pitch of ten characters per inch (CPI) while Letter Gothic can print at either 12 CPI or 18 CPI. Although there appears to be no Italics mode you can highlight words by underlining them, using Bold-face type or even printing them in another colour. If you are really desperate for italics you could always download your own character set. This is stored in the printers RAM and eats into the 8k print buffer. Those who work with scientific formulae will certainly find the subscript and superscript modes useful. You can choose from three different line space settings of six, eight, or nine lines per inch. Careful setting of the page and text lengths, together with a perforation skip mode, can produce an extremely tidy document layout.

The Paintjet can print text in either one or both directions. Printing at around 167 characters per second (CPS) in near letter quality at 10 CPI it easily outperforms its Xerox rival which can only manage 40 CPS. Even in draft mode the Xerox only operates at half the speed of the Paintjet. Smaller Paintjet pitches produce even faster speeds of 200 CPS at 12 CPI and a staggering 300 CPS at a pitch of 18 CPI. This machine is no sluggard when printing colour pictures either. It can print a full page of colour graphics within four minutes, regardless of the complexity of the image. Transparencies need a greater saturation of ink and take up to eight minutes. Being a non-impact printer it achieves this remarkable speed without too much unwelcome noise.

When printing in colour there is a choice of Two resolutions. At the highest resolution of 180 dots per inch seven basic colours are printed. These are represented by the ink colours plus red, green and blue which are created by mixing inks. At ninety dot resolution there are four ink dots per raster position. Using the basic colours to print these dots according to a 'two by two dithering' technique up to 330 different shades of colour are produced. The horizontal registration of the Paintjet is as near perfect as I could wish. Cheaper colour printers often suffer from overlapping printlines or, even worse, gaps between lines. In this area the pedigree of the Paintjet is undeniable.

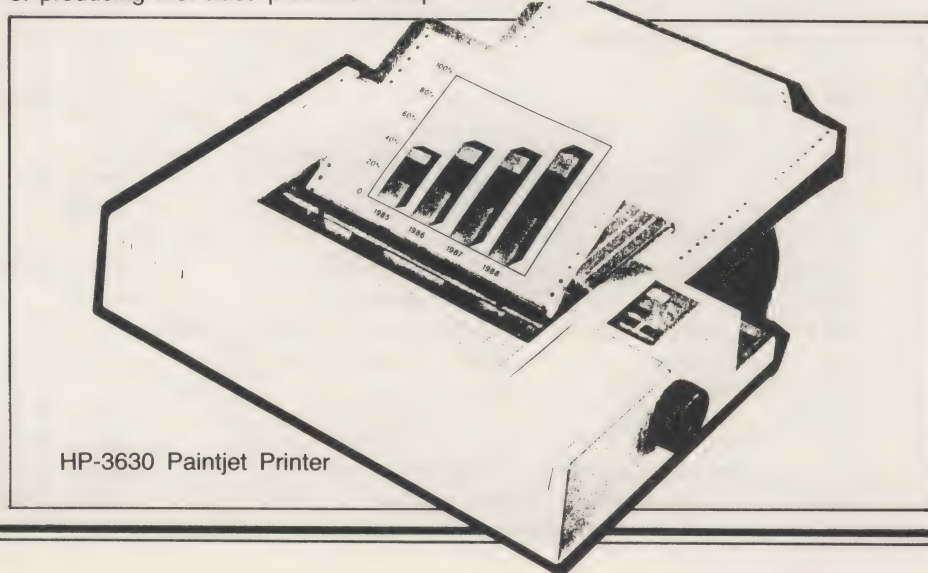
Hewlett-Packard are one of those companies with the enviable reputation of producing first-class products. In ap-

plications where quality really counts it is never surprising to find their products in use. This quality has never really come cheaply and this is certainly true of their Paintjet printer. A few lucky home users may be able to spend around a thousand pounds on a colour printer but most will unfortunately only be able to dream. This printer is clearly aimed at professional users to produce high quality reports and presentations in colour. A brief look at the comprehensive manual will confirm this as only computers in the business price range are described, sadly omitting even the Amiga 2000. This should not deter Amiga owners who need this print quality. Although there is no standard printer driver for the Paintjet with workbench 1.2 one will be included with WB 1.3. If you decide to buy a Paintjet before Workbench 1.3 becomes available then you should try to convince your supplier that customers spending over a thousand pounds on a printer deserve to have the driver thrown in.

Speed, quality and economy are always opposing forces when selecting a printer. The Paintjet is heavily biased towards speed, with little compromise on quality. If this is the combination you need then the HP-3630, Paintjet, from Hewlett-Packard is certainly worth considering.

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HP-3630 Paintjet Printer

QUAD

'Quick and Dirty' - easy riding on the Amiga trail

Most of you will have seen one of those 'fancy coloured lines' demos on the Amiga by now. With this month's article I hope to show you how to achieve this effect with a very short piece of assembly code.

The beauty of using the graphics routines via Intuition is the way in which memory for screen display etc. is handled by the system. Allocation and deallocation of memory is performed automatically with a call to OpenScreen or CloseScreen for example.

Before we can do any graphics with the Amiga we are going to need a Rastport. A Rastport is a structure of variables from which the Amiga can glean the information it needs in order to perform the many graphics functions it is capable of. Among those variables are the addresses of the actual bit planes, the current colour of the drawing 'pen', the drawing mode etc.

When we open up a screen and/or window, we are given a pointer to a

structure which contains the address of the relevant Rastport. So all we have to do is to store this address and make sure that it is passed to the function we are calling via the appropriate address register, more often than not A1.

Turning now to the listing, you will notice that we are opening up a Borderless Backdrop window over a custom screen. It is possible to perform the line drawing routines via the screens' own Rastport but we need the Closewindow system gadget for program termination and this is the tidiest way of achieving it. The listing should be easy enough to follow. Once the libraries have been opened and the data structures initialised, the program sits in a loop which calls the line drawing subroutine and tests the window message port to see if the close window gadget has been clicked. The line drawing routine simply adds an increment (either positive or negative) to the existing X and Y co-ordinates of the start point and end point of the line.

For a more detailed explanation of the functions you should consult the Libraries and Devices ROM Kernel manual.

Try changing the increments for different effects but bear in mind the window limits. With the limits set at 10,630 for the X and 10,190 for the Y, then an increment of greater than ten will crash the machine so be careful. Also, if you want to see just how fast and smooth the Amiga is, then remove the call to WaitTOF. So there you are then. A short and straightforward way to do graphics on the Amiga via Intuition and an example that shows how compact the assembly code can be when compared to some other languages. Happy coding.

G.Z.

All of the assembly language examples in this series were written using Devpac Amiga from HiSoft. Consult your assembler manual to reconcile the differences in the listings, which should vary little from one make to another.

<pre> OPT C-,D+ INCDIR "SYS:INCLUDE/" INCLUDE GRAPHICS/GRAPHICS_LIB.I INCLUDE INTUITION/INTUITION.I INCLUDE INTUITION/INTUITION_LIB.I INCLUDE EXEC/EXEC_LIB.I NULL EQU 0 LEA INTLIB,A1 ; name of library MOVEQ #\$00,D0 CALLEXEC OPENLIBRARY ; open TST D0 ; 0 = fail BEQ ERROR ; so exit MOVE.L D0,_INTUITIONBASE ; else store pointer LEA GFXLIB,A1 ; same for MOVEQ #\$00,D0 ; graphics library CALLEXEC OPENLIBRARY ; TST D0 ; 0 = fail BEQ ERROR ; so exit MOVE.L D0,_GFXBASE ; else store pointer LEA NEWSCREEN,A0 ; pointer to our screen CALLINT OPENSCHREEN ; open TST D0 ; 0 = fail BEQ ERROR ; so exit MOVE.L D0,SCREEN_PTR ; else store screen pointer MOVE.L D0,A0 ; copy to address req. ADD.L #SC_VIEWPORT,A0 ; to obtain Viewport addr. LEA PALETTE,A1 ; address of our colours MOVE.L #OF,D0 ; no. of colours CALLGRAF LOADRGB4 ; load palette LEA NEWWINDOW,A0 ; pointer to our window MOVE.L SCREEN_PTR,NW_SCREEN(A0) ; link screen !! CALLINT OPENWINDOW ; open routine </pre>	<pre> TST D0 ; 0 = fail BEQ KILL_SCREEN ; so close screen - exit MOVE.L D0,WDW_PTR ; else store pointer MOVE.L D0,A0 ; copy to address req. MOVE.L WD_RPORT(A0),A0 ; to obtain Rastport MOVE.L A0,RAST_PORT ; store pointer to Rastport MOVE.L SCREEN_PTR,A0 ; our screen pointer MOVE.L #0,D0 ; D0 = FALSE CALLINT SHOWTITLE ; hide screen title bar LOOP CALLGRAF WAITTOF ; sync with raster scan BSR DOLINE ; go do lines.... MOVE.L WDW_PTR,A0 ; our window pointer MOVE.L WD_USERPORT(A0),A0 ; to obtain message CALLEXEC GETMSG ; obtain message TST D0 ; D0 = 0 = no message BEQ LOOP ; so loop MOVE.L D0,A0 ; can only be CLOSEWINDOW MOVE.L IM_CLASS(A0),D0 ; in this case but obtain ANDI.L #CLOSEWINDOW,D0 ; and check always BEQ LOOP ; nope - loop KILL_WINDOW MOVE.L WDW_PTR,A0 ; close window FIRST ! CALLINT CLOSEWINDOW ; KILL_SCREEN MOVE.L SCREEN_PTR,A0 ; then close screen CALLINT CLOSESCREEN ; ERROR RTS ; exit DOLINE SUBI.W #\$01,COUNT ; decrement count BNE NO_COLOUR ; not expired MOVE.W MAX,COUNT ; has expired - reload MOVE.W COLOUR,D0 ; </pre>
---	---


```

CMP.W    #0F,D0          ; colour = max for screen ?
BLT      COLOUR_OK       ; no - then add
MOVE.W   #-1,D0          ; else reset
COLOUR_OK
ADD.W    #01,D0          ; add for colour update
MOVE.W   D0,COLOUR       ; store back
MOVE.L   RAST_PORT,A1    ; get Rastport
CALLGRAF SETAPEN         ; call colour routine
NO_COLOUR
MOVE.W   X1,D0            ; line first X
MOVE.W   Y1,D1            ; line first Y
MOVE.W   X2,D2            ; line second X
MOVE.W   Y2,D3            ; line second Y
MOVE.W   ADDX1,D4         ; increments
MOVE.W   ADDY1,D5         ; in D4 - D7
MOVE.W   ADDX2,D6
MOVE.W   ADDY2,D7
CMP.W    MAXX,D0          ; check for limits
BHI      X1_FLIP          ; against maximum
CMP.W    MINX,D0          ; for screen
BHI      CHECK_X2
X1_FLIP
NEG.W    D4               ; flip if necessary
CHECK_X2
CMP.W    MAXX,D2          ; same for second X
BHI      X2_FLIP
CMP.W    MINX,D2
BHI      CHECK_Y1
X2_FLIP
NEG.W    D6
CHECK_Y1
CMP.W    MAXY,D1          ; Y1 check
BHI      Y1_FLIP
CMP.W    MINY,D1
BHI      CHECK_Y2
Y1_FLIP
NEG.W    D5
CHECK_Y2
CMP.W    MAXY,D3          ; Y2 check
BHI      Y2_FLIP
CMP.W    MINY,D3
BHI      Y2_OK
Y2_FLIP
NEG.W    D7
Y2_OK
ADD.W    D4,D0            ; add all increments
ADD.W    D5,D1
ADD.W    D6,D2
ADD.W    D7,D3
MOVE.W   D0,X1            ; store results
MOVE.W   D1,Y1
MOVE.W   D2,X2
MOVE.W   D3,Y2
MOVE.W   D4,ADDX1         ; store increments
MOVE.W   D5,ADDY1
MOVE.W   D6,ADDX2
MOVE.W   D7,ADDY2
MOVE.L   RAST_PORT,A1
CALLGRAF MOVE             ; move to point X1,Y1
MOVE.L   RAST_PORT,A1
MOVE.W   D2,D0            ; move regs.
MOVE.W   D3,D1
CALLGRAF DRAW             ; draw line to X2,Y2
RTS                      ; done !

NEWSCREEN:
DC.W     0,0              ;screen XY origin

```

```

DC.W     640,200          ;screen width, height
DC.W     4                 ;screen depth (number of bitplanes)
DC.B     0,1              ;detail and block pens
DC.W     V_HIRES           ;display modes
DC.W     CUSTOMSCREEN      ;screen type
DC.L     NULL              ;pointer to default screen font
DC.L     NULL              ;screen title
DC.L     NULL              ;list of custom screen gadgets
DC.L     NULL              ;pointer to custom BitMap structure
EVEN

```

PALETTE:

```

DC.W     $0000            ;color #0
DC.W     $056F            ;color #1
DC.W     $02CF            ;color #2
DC.W     $0F4F            ;color #3
DC.W     $0FF8            ;color #4
DC.W     $0F00            ;color #5
DC.W     $0FFF            ;color #6
DC.W     $0FF1            ;color #7
DC.W     $0F80            ;color #8
DC.W     $0900            ;color #9
DC.W     $01F0            ;color #10
DC.W     $0FAB            ;color #11
DC.W     $050A            ;color #12
DC.W     $092F            ;color #13
DC.W     $0382            ;color #14
DC.W     $02DC            ;color #15

```

NEWWINDOW

```

DC.W     0,0              ;window XY origin
DC.W     640,200          ;window width, height
DC.B     0,1              ;detail and block pens
DC.L     CLOSEWINDOW      ;IDCMP flags
DC.L     WINDOWCLOSE+BACKDROP+BORDERLESS+ACTIVATE ;flags
DC.L     NULL              ;gadget list pointer
DC.L     NULL              ;pointer to checkmarkimagery
DC.L     QUADTITLE        ;window title pointer
DC.L     NULL              ;custom screen pointer
DC.L     NULL              ;custom bitmap
DC.W     5,5              ;minimum width, height
DC.W     640,200          ;maximum width, height
DC.W     CUSTOMSCREEN      ;destination screen

```

QUADTITLE

```

DC.B     "QUAD LINES !!",0 ; title bar text
EVEN

```

COUNT	DC.W	1	INTLIB	DC.B	"intuition.library",0
MAX	DC.W	24	EVEN		
COLOUR	DC.W	0	GEXLIB	DC.B	"graphics.library",0
			EVEN		
X1	DC.W	100	_INTUITIONBASE	DC.L	0
X2	DC.W	30			
Y1	DC.W	30			
Y2	DC.W	80	_GEXBASE	DC.L	0
ADDX1	DC.W	4			
ADDX2	DC.W	2	_DOSBASE	DC.L	0
ADDY1	DC.W	3			
ADDY2	DC.W	2	SCREEN_PTR	DC.L	0
MAXX	DC.W	630			
MINX	DC.W	10	WDW_PTR	DC.L	0
MAXY	DC.W	190			
MINY	DC.W	10	RAST_PORT	DC.L	0

PROWRITE 2

Many popular programs are now re-appearing as updated versions. New features have been added and, bugs removed. Prowrite 2 is such a creature. John Walker compares it to its predecessor.

Now that affordable colour printers are with us, (thank you, Okimate!) more people are eager to add a little flash to their word-processing: a tinge of blue in a heading, a touch of red to add emphasis to words, or the dazzle of a digitized picture using the Amiga's 4096 shades. Colour me happy indeed!

ProWrite, a graphics-oriented word processor that used the Amiga's many fonts as an alternative to a printer's typefaces, was the first to let you create documents in colour. Unfortunately, its flickering interlaced display made typing a blinding chore — unless you were rich enough to own a long persistence monitor.

ProWrite 2.0, the latest enhancement, overcomes this problem by providing ProWrite MR, an additional program that has a flicker-free medium resolution display. In ProWrite MR, text and graphics look twice as tall on the screen, but will print correctly. Other improvements include spell-check, and mail-merge facilities and the ability to make global changes to a document.

Most users will find it best to use ProWrite MR to create a document and ProWrite, with its high resolution WYSIWYG (What You See Is What You Get) display, to check it looks as it should. It would be a help if you could switch between resolutions within the program. As it is you have to save a document, exit from Prowrite MR, run ProWrite and re-load your document.

ProWrite 2.0 comes on two unprotected system and program disks, together with a clear indexed manual. It will run on any Amiga with a 1.2 Kickstart, although performance is improved with expanded memory, since both fonts and large-scale graphics eat up RAM.

The system disk contains Commodore's new 1.3 printer drivers, which are a considerable improvement over the 1.2 ones. Preferences now contains a second screen for graphics printing which allows you to specify print densities and anti-aliasing which has the effect

of smoothing jagged edges.

The program disk includes two spell-checkers, one using a 95,000 word dictionary and the other a smaller dictionary for speedier checks. Their efficiency can be improved by loading them into RAM. By deleting unnecessary parts of the

'The system disk contains Commodore's new 1.3 printer drivers, which are a considerable improvement over the 1.2 ones.'

system disk, it is possible to fit everything you need, including the dictionaries, on one disk. Also included is a demo version of New Horizons' idea processor, Flow.

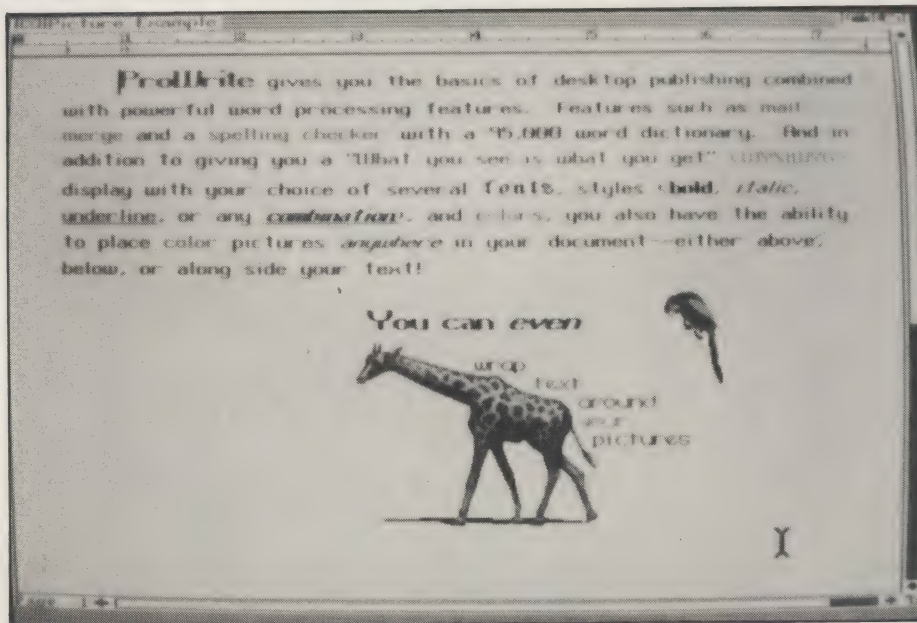
ProWrite 2.0 is compatible with documents created in Flow and with any text file saved in ASCII format. It will load

graphics saved as IFF-format files and is particularly good when used with ones created in Deluxe Paint and Deluxe Paint II, since it treat their background colour as transparent.

As a result you can overlay text on any Deluxe picture very easily. ProWrite 2.0 is limited to seven colours so that those drawn using 16, 32 or 4096 shades all lose something of their original quality.

Images can be shaded, which gives the impression of extra colours, although using no shading at all can create striking images. Shading takes a little time, requiring up to two minutes wait until the picture appears on screen. What you then see is precisely how the picture will look when it is printed. Graphics can be re-sized horizontally and vertically on the page, although such changes may distort the original. ProWrite will also convert colour pictures to black and white images.

You can edit text either by using the mouse and pulldown menus or sensibly chosen keyboard controls which make good use of the function keys. Up to eight



TEST DRIVE

You can sort paragraphs in ascending or descending alphabetical order, copy the format of one paragraph to another and justify text. Tab spacing is variable

The program lacks some advanced

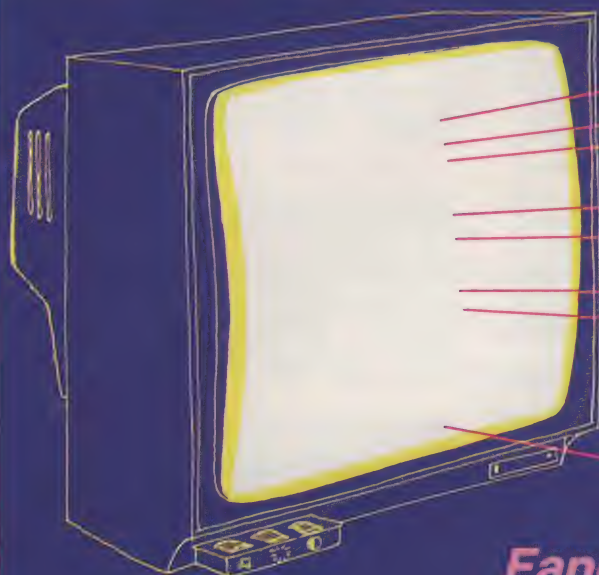
Anyone whose demands fall short of writing books or long documents involving calculations would find ProWrite 2.0 a very worthwhile purchase. If you need word-processing with graphics and multiple fonts, then you should certainly check it out. For adding a splash of colour to documents it is, at the moment, in a class on its own.

ProLITE: 2.0 PRO: Basic Color Games: Set Colors: 100 [F1] [F2] [F3] [F4] [F5] [F6] [F7] [F8] [F9] [F10] [F11] [F12] [Esc] [Tab] [Win] [Alt] [Ctrl] [Shift] [Cmd] [Opt] [Fn] [F13] [F14] [F15] [F16] [F17] [F18] [F19] [F20] [F21] [F22] [F23] [F24] [F25] [F26] [F27] [F28] [F29] [F30] [F31] [F32] [F33] [F34] [F35] [F36] [F37] [F38] [F39] [F40] [F41] [F42] [F43] [F44] [F45] [F46] [F47] [F48] [F49] [F50] [F51] [F52] [F53] [F54] [F55] [F56] [F57] [F58] [F59] [F60] [F61] [F62] [F63] [F64] [F65] [F66] [F67] [F68] [F69] [F70] [F71] [F72] [F73] [F74] [F75] [F76] [F77] [F78] [F79] [F80] [F81] [F82] [F83] [F84] [F85] [F86] [F87] [F88] [F89] [F90] [F91] [F92] [F93] [F94] [F95] [F96] [F97] [F98] [F99] [F100] [F101] [F102] [F103] [F104] [F105] [F106] [F107] [F108] [F109] [F110] [F111] [F112] [F113] [F114] [F115] [F116] [F117] [F118] [F119] [F120] [F121] [F122] [F123] [F124] [F125] [F126] [F127] [F128] [F129] [F130] [F131] [F132] [F133] [F134] [F135] [F136] [F137] [F138] [F139] [F140] [F141] [F142] [F143] [F144] [F145] [F146] [F147] [F148] [F149] [F150] [F151] [F152] [F153] [F154] [F155] [F156] [F157] [F158] [F159] [F160] [F161] [F162] [F163] [F164] [F165] [F166] [F167] [F168] [F169] [F170] [F171] [F172] [F173] [F174] [F175] [F176] [F177] [F178] [F179] [F180] [F181] [F182] [F183] [F184] [F185] [F186] [F187] [F188] [F189] [F190] [F191] [F192] [F193] [F194] [F195] [F196] [F197] [F198] [F199] [F200] [F201] [F202] [F203] [F204] [F205] [F206] [F207] [F208] [F209] [F210] [F211] [F212] [F213] [F214] [F215] [F216] [F217] [F218] [F219] [F220] [F221] [F222] [F223] [F224] [F225] [F226] [F227] [F228] [F229] [F230] [F231] [F232] [F233] [F234] [F235] [F236] [F237] [F238] [F239] [F240] [F241] [F242] [F243] [F244] [F245] [F246] [F247] [F248] [F249] [F250] [F251] [F252] [F253] [F254] [F255] [F256] [F257] [F258] [F259] [F260] [F261] [F262] [F263] [F264] [F265] [F266] [F267] [F268] [F269] [F270] [F271] [F272] [F273] [F274] [F275] [F276] [F277] [F278] [F279] [F280] [F281] [F282] [F283] [F284] [F285] [F286] [F287] [F288] [F289] [F290] [F291] [F292] [F293] [F294] [F295] [F296] [F297] [F298] [F299] [F300] [F301] [F302] [F303] [F304] [F305] [F306] [F307] [F308] [F309] [F310] [F311] [F312] [F313] [F314] [F315] [F316] [F317] [F318] [F319] [F320] [F321] [F322] [F323] [F324] [F325] [F326] [F327] [F328] [F329] [F330] [F331] [F332] [F333] [F334] [F335] [F336] [F337] [F338] [F339] [F340] [F341] [F342] [F343] [F344] [F345] [F346] [F347] [F348] [F349] [F350] [F351] [F352] [F353] [F354] [F355] [F356] [F357] [F358] [F359] [F360] [F361] [F362] [F363] [F364] [F365] [F366] [F367] [F368] [F369] [F370] [F371] [F372] [F373] [F374] [F375] [F376] [F377] [F378] [F379] [F380] [F381] [F382] [F383] [F384] [F385] [F386] [F387] [F388] [F389] [F390] [F391] [F392] [F393] [F394] [F395] [F396] [F397] [F398] [F399] [F400] [F401] [F402] [F403] [F404] [F405] [F406] [F407] [F408] [F409] [F410] [F411] [F412] [F413] [F414] [F415] [F416] [F417] [F418] [F419] [F420] [F421] [F422] [F423] [F424] [F425] [F426] [F427] [F428] [F429] [F430] [F431] [F432] [F433] [F434] [F435] [F436] [F437] [F438] [F439] [F440] [F441] [F442] [F443] [F444] [F445] [F446] [F447] [F448] [F449] [F450] [F451] [F452] [F453] [F454] [F455] [F456] [F457] [F458] [F459] [F460] [F461] [F462] [F463] [F464] [F465] [F466] [F467] [F468] [F469] [F470] [F471] [F472] [F473] [F474] [F475] [F476] [F477] [F478] [F479] [F480] [F481] [F482] [F483] [F484] [F485] [F486] [F487] [F488] [F489] [F490] [F491] [F492] [F493] [F494] [F495] [F496] [F497] [F498] [F499] [F500] [F501] [F502] [F503] [F504] [F505] [F506] [F507] [F508] [F509] [F510] [F511] [F512] [F513] [F514] [F515] [F516] [F517] [F518] [F519] [F520] [F521] [F522] [F523] [F524] [F525] [F526] [F527] [F528] [F529] [F530] [F531] [F532] [F533] [F534] [F535] [F536] [F537] [F538] [F539] [F540] [F541] [F542] [F543] [F544] [F545] [F546] [F547] [F548] [F549] [F550] [F551] [F552] [F553] [F554] [F555] [F556] [F557] [F558] [F559] [F560] [F561] [F562] [F563] [F564] [F565] [F566] [F567] [F568] [F569] [F570] [F571] [F572] [F573] [F574] [F575] [F576] [F577] [F578] [F579] [F580] [F581] [F582] [F583] [F584] [F585] [F586] [F587] [F588] [F589] [F590] [F591] [F592] [F593] [F594] [F595] [F596] [F597] [F598] [F599] [F600] [F601] [F602] [F603] [F604] [F605] [F606] [F607] [F608] [F609] [F610] [F611] [F612] [F613] [F614] [F615] [F616] [F617] [F618] [F619] [F620] [F621] [F622] [F623] [F624] [F625] [F626] [F627] [F628] [F629] [F630] [F631] [F632] [F633] [F634] [F635] [F636] [F637] [F638] [F639] [F640] [F641] [F642] [F643] [F644] [F645] [F646] [F647] [F648] [F649] [F650] [F651] [F652] [F653] [F654] [F655] [F656] [F657] [F658] [F659] [F660] [F661] [F662] [F663] [F664] [F665] [F666] [F667] [F668] [F669] [F670] [F

THE GREAT COVER UP!



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TV★SHOW

Fancy wipes, reveals, fades and rolls — all at your fingertips in a new slideshow utility. Peter Lee finds out just how special its effects are...

If the recent influx of specialist software is anything to go by, the Amiga is busily carving a niche for itself as the prime computer for serious video work. Its cheapness compared to dedicated consoles, the superb quality of its graphics and ease of use, all add up to the perfect tool for video presentation. The trouble is that all these powerful graphics packages are arriving piecemeal; you find yourself needing one package to do one thing, then another to do something else. The perfect package has yet to be produced. Meanwhile, users have to add to their libraries of utilities each new program which boasts something the previous one did not have.

This is true of TV★Show; its many screen transitions and effects are marvellous tools; something very special but still only one facet of video presentation. At its barest, it is a highly sophisticated slide-show program; at its best it allows you to compose a script for displaying images with some very professional wipes and transitions from one screen to another, with the added attraction of moving brush effects.

TV★SHOW is produced by the Zuma group and comes on a single unprotected disk, making a backup and transfer to hard disk possible, together with a manual in paperback-book form. Although the program will work adequately with 512K memory, to gain best results Zuma recommend a minimum 1 Meg., otherwise you will be limited by the number and resolution of screens you can work with. Some scripts too large to be seen properly from the TV★SHOW editor on 512K machines may be playable

via the smaller Player program. Permission is given for this latter module to be freely copied to allow you to send your work to friends without breaching copyright laws. There are also some good hints in the manual to enable users with less memory to get the most out of the program.

The disk contains a number of demos; nothing really outstanding apart from the automatic tutorial, which is a gem. It is instructive and at the same time captures the potential of the program far more than any of the simple examples. Added to that it uses the computer's speech to actually tell you what is going on as it guides you through the various menus and icons, flying objects around

write. This is a mixed blessing, because while you can do a simplified text printout of the events in a script for reference, you have to actually edit the show from within the program. I like to work with a RAM disk to speed up loading of images but having initially specified this path while working on your script, you have to go through a utility program on the TV★SHOW disk

"Even on my 2.5 megabyte machine I ran into 'insufficient chip memory' problems"

which will physically move your files from their source to a new destination (perhaps DF1:) and automatically rewrite the script to incorporate this new path for your images. Moderately inconvenient but you simply can not edit this item in the playback script.

Another slight and unexpected niggle occurred when I loaded a screen as the first event, then tried a fancy wipe to reveal the next image. Although TV★SHOW is versatile — it can display PAL, NTSC and overscan images with no problem, I found the random dot wipe on the first image worked only on an NTSC-sized portion of the picture, leaving a good 4cm to simply be revealed en-bloc at the bottom. The other fancy effects were, however, trouble-free so it seems like a one-off bug. Minor irritations in an otherwise highly professional program — and nowhere is this quality more evident than in the tremendous array of transition events available.



START OF CHEQUERBOARD WIPE

and pointing to items the voice is referring to. Armed with this information and ploughing through a text-book of a manual which was obviously written by a scholar for scholars, it is easy to launch straight into the program and experiment.

TV★SHOW scripts are composed of a number of 'events', which are determined entirely from menu choices made with the mouse — there are no text files to

Once you have specified which screen to load, you can choose in which way it will reveal itself. There are over 50 special effects on tap and all give slick, smooth and flicker-free results. The most stunning of these are the pattern wipes; while the old image is still being displayed, the new one can emerge a portion at a time. For instance there is a chequerboard wipe and a highly sophisticated random dot reveal which builds up the next picture a small piece at a time. The various pattern effects are not documented in the manual but their splendid icons show exactly what will happen when selected and experimentation reveals some very clever attributes.

Alongside these powerful features there are standard slideshow effects — rolls and fades, together with more powerful screen wipes which uncover the new image across the old one in a similar way to the old B-movie wipes from scene to scene. Problems can arise if you do not use a common palette for images wiping over each other. Rolls and fades are safe but on some special wipes the new screen colours can take over before your old image is replaced, leaving it looking like the insides of a frog. Using pictures of differing resolutions with pattern wipes can also prove a handicap and there are guidelines in the manual to help figure out which pitfalls to avoid. For instance fade works on all screen variations with the rider that HAM screen might not turn entirely to black. There is also some valuable information about how to optimise the program by tailoring your screen resolution and number of colours. Using a high-resolution screen of 16 colours give crisp text displays but eats up 128K of precious chip memory, whilst cutting the number of colours to 8 uses 96K. In any event the amount of free chip memory is vital and even on my 2.5



END OF VENETIAN BLIND WIPE
megabyte machine I ran into 'insufficient chip memory' problems with some fancy effects on hi-res screens because, although all that ram is available for storage, only 512K is usable to actually display images from.

The program also supports colour cycling, which can be turned on or off anywhere during the script but you have to be sure the colours were actually



TILE EFFECT

cycling when saved from DeluxePaint or the cycle information will not be available to TV★SHOW. I must confess I had very little success with this particular feature.

As well as screens, objects can be loaded and displayed and as the background colour is transparent they can fly over the previously displayed screen. Whilst their appearance can be controlled by the effects menu (you can fade them in, have them wipe on and off using the many pattern options just like a full screen), their actual path across the screen is limited.

"You can have a running commentary while the show is in progress"

You have to specify the position in which the object (most likely a DeluxePaint brush or a small area of an otherwise all-background screen) will come to rest, then decide which portion of the screen it will fly in from — top, bottom, left, right or any corner. There is no actual control of this path other than speed, so if you wanted an object to circle another, then zoom off, you could not do it. Still, this is a slideshow program and I am probably expecting too much in the way of animation. As I said, one program for one thing, another for something else...and so on until you either get what you want or go bankrupt trying!

Editing a script is very straightforward and is totally icon-driven with the ability to move portions, add or delete. If you want to add a new screen at the beginning of a script, though, you have to be a little devious as the insert function asks for the event number you want your new one to be inserted 'after'. The way I got round this was to insert the new event in between 1 and 2 (the new event is then automatically numbered 2 and subsequent events are renumbered), then 'move' event 1 to 'after' 2. Your new screen is now labelled event 1 and the former start screen is number 2. It sounds complicated but it is made simple by the friendly editor.

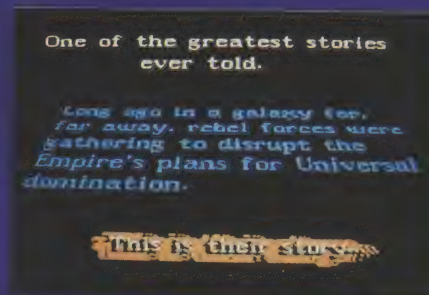
You are also able to merge already written scripts into memory, so building up a series of modules a piece at a time, then combining them for that big block-

busting display. Key events can also be used to good effect, pausing the display until a specified key is pressed — at least creating a semblance of interaction. Whilst it is possible to loop certain marked portions of a script in a continuous carousel, there is unfortunately no 'jump to event' command, which precludes a menu-type program showing selected images.

Perhaps the final touch you will need to add is speech; you can have a running commentary while the show is in progress, using text saved as standard ASCII files. Practice makes perfect here as one event will not end until the speech associated with it is completed, so it is best to have several small speech files rather than one long one. This effect can be used either to explain to viewers what your images are conveying, or act as prompts for you to help outline what is coming next — in the case of dumping to video tape you could have the computer tell you to pause the tape and load in script two, for instance.

CONCLUSION

Despite its restricted scope — after all, it really is simply a slideshow utility — TV★SHOW contains effects which are new and very useful, especially to the video titler, though there is no reason why you can not simply build up a display of your artwork for screening on the computer. The program is at its best when using the innovative wipe effects, though the palette problem may diminish its usefulness with your old screens. However, it is no real hardship to maintain a standard palette for new screens you intend passing to the program. Genlock owners will be able to realise the program's true potential for overlaying effects on videotape but there is still plenty here for other users who need the kind of display effects it can perform. Business presentations



ANIMATED SLIDESHOW!

would be well-suited to its capabilities and I can see some areas of education benefitting from the speak and display functions. Check it out with a store demo first because, after all, if it does what you want, then you will probably find it well worth the money.

P.L.

Price: £99.95

Contact: Microdealer — 0908 74000

EBONSTAR

Microillusions

In contrast to the complexities of their excellent Faery Tale Adventure, Microillusions have now come up with a game of surprising simplicity.

Ebonstar takes elements from a few ancient coin-ops and with a neat vector graphic effect, results in a game rather like those oldies Space Wars and Stella Castle. A single static grid is the playfield throughout the game. Moving at random around the grid is a kind of black hole that swallows up everything in its range. The object is to destroy the void by shooting a bolt of energy straight down the maintenance beam projected by the constantly circling Arch. Up to four players can be on the grid at

launched as well as a few extra weapons that can be caught by the players.

Simple games can often be some of the best games, but this is not really the case with Ebonstar. The void moves around with absolutely mesmerising smoothness appearing frighteningly how one would imagine a real black hole to be. The explosion has been very well done, too but Ebonstar plays at far too slow a pace with too little action to create the level of excitement it attempts. Its music, sound effects and most of its graphics are incredibly simple, which coupled with the tedious gameplay and high asking price make this a bit of a non-starter.

"The void moves around with absolutely mesmerising smoothness appearing frighteningly how one would imagine a real black hole to be. The explosion has been very well done too, but Ebonstar plays at far too slow a pace with too little action to create the level of excitement it attempts."

one time. The players' aims are twofold: to destroy the hole and also to force each other into its lifeless depths.

Each player controls a ship armed with an energy bolt cannon. These repel other ships on impact, and so can be used to push other players around. From the Arch, drone ships and a few other aliens are

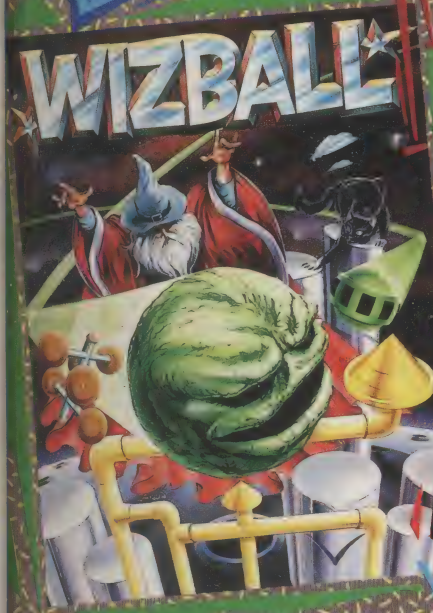


Inside Ebonstar is a great and fascinating game dying to come out — unfortunately the black hole seems to have sucked away Microillusions' usual brilliance.

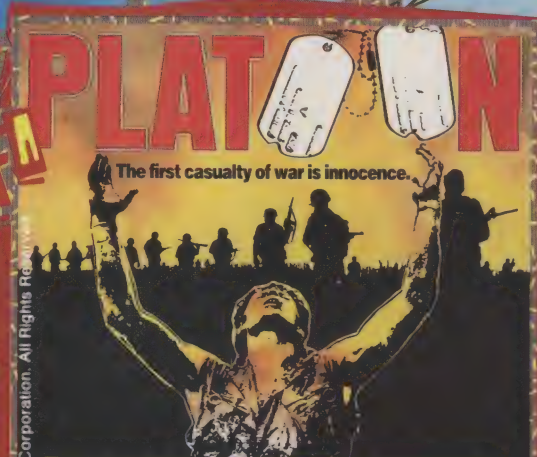
B.V

Graphics: 4
Sound: 3
Playability: 4
Value: 3
Price: £18.99

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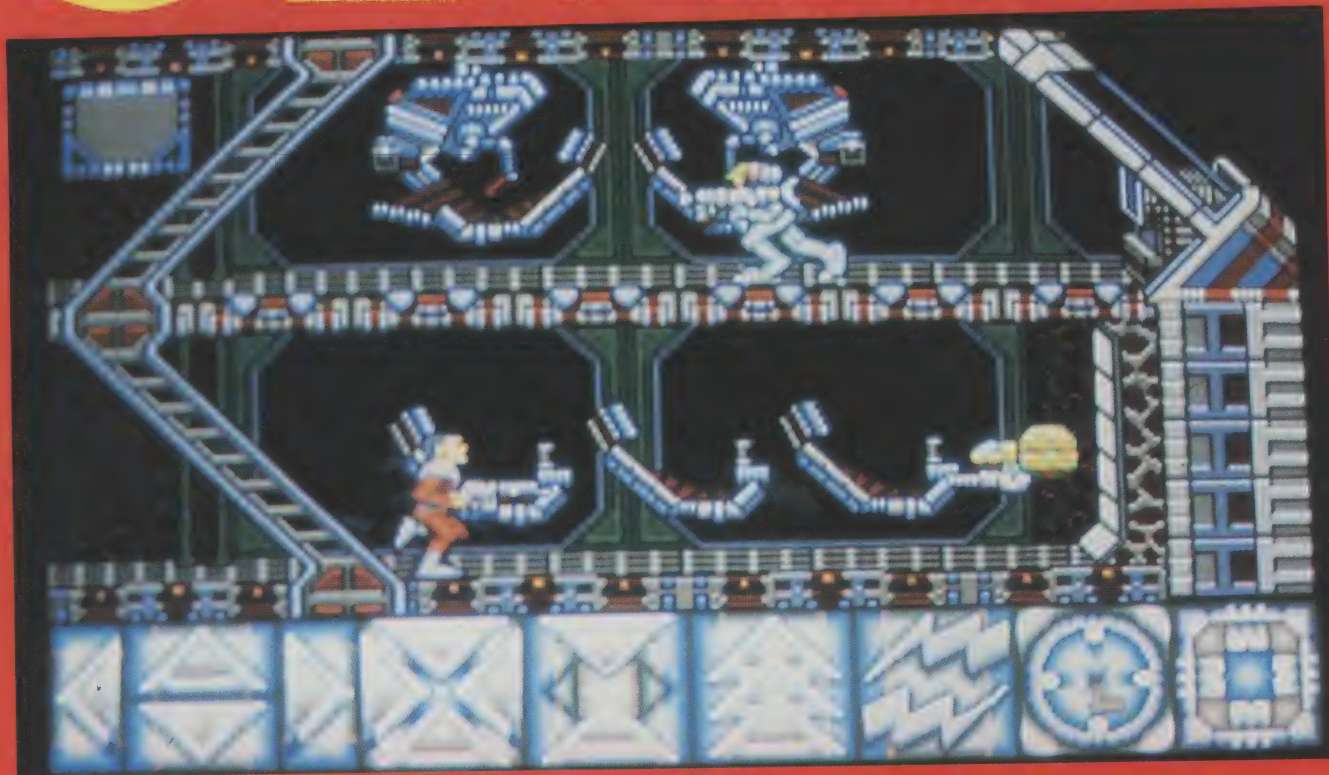


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OBLITE



Genetically enhanced super-humans were the Earth's emergency defence force, a kind of future SAS. Known as the Obliterators, they had been designed to be alert, brave, swift and above all, very strong. Alas, all but one have now been destroyed during action. When Earth came under attack from the most powerful ship ever built, there was no choice but to send in that last Obliterator.

Four vital components spread throughout the ship are vital to its operation. Removal of these would leave it defenceless against Earth's forces. You, as Drak, the last Obliterator must find and remove these components before making your escape.

To be honest, Obliterator is really Barbarian in space. As Barbarian was and still is one of the best games around for the Amiga, this has to be a good point in anybody's judgement. Over one hundred screens make up the play area which uses a flick-screen side-on view. A strip of icons along the bottom of the screen is used to control Drak. These allow our hero to run, pick up, defend, enter, shoot and jump. I was a little disappointed to see that Psygnosis have not improved their sprite handling routines, which are still a little slow and even jerky at times. However, this has been disguised and compensated by the incredibly dynamic-looking animation frames of Drak in action.

Each room and corridor in the ship is guarded by members of an army of semi-robotic creatures. Some sit astride android ostriches, others fire at you from hovering bucket seats, and others just blast you with shoulder-mounted bazookas. Luckily, you are not defenceless. Using the defend icon when standing still causes Drak to press himself up against the wall, whilst defending when running initiates a spectacular roll. Four weapons are available to Drak. He starts out with a pistol, but the more powerful weapons, the rifle, blaster and bazooka have to be found. Ammo is limited and separate cartridges for each gun can also be found dotted about the ship.

"Six degrees of elevation are possible, giving a tremendous sensation of power."

As you can see, the graphics are superb throughout the game, only lacking slightly in variety. Some of the best frames can be seen when aiming a weapon. Six degrees of elevation are possible, giving a tremendous sensation of power. Some aliens cannot be destroyed with a pistol and require the power of the bigger guns. You would expect the ammunition for these to be less abundant, but their capacity is also substantially more limited.

ERATOR

Psygnosis

For example, the pistol can hold up to fifty shots, where as the bazooka can only hold three.

Typical of Psygnosis, Obliterator is excellently presented. A large glossy package houses the disk, which when booted treats the player to a beautifully shaded animation of Drak showing off his fire power. A pixel perfect copy of the cover artwork follows before the game starts. A poster of the artwork is also included.

"Obliterator's spectacular graphics are immediately appealing, and some of the surprises later in the game prolong the attraction."

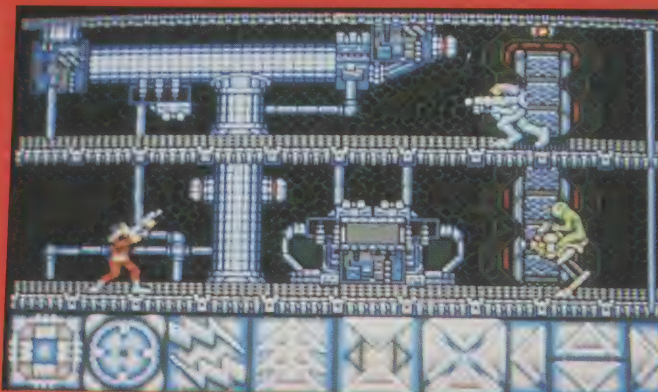
Obliterator's one annoying point is that at times, Drak ignores your commands and goes off on his own rambles, sometimes ending in a fatal collision with a baddie. When compared to Barbarian, it did not give me such a strong urge to progress, maybe because in Barbarian, you knew that the next screen or two would bring on yet another new and imaginative monster. One improvement it has over Barbarian is the facility to save the game at one of several set positions.

There are a few reasonable sound effects during the game, but the atmospheric music compensates for this unusual mediocrity. Obliterator's spectacular graphics are immediately appealing, and some of the surprises later in the game prolong the attraction. My advice to Psygnosis is that they spend a good deal of time developing their sprite routines. Once they have mastered that, they will be capable of producing true arcade quality games, which must be their ultimate goal.

Nevertheless, their present release, Obliterator, keeps up Psygnosis' exceptionally high standards and I strongly recommend it as a great game to have in your collection.

T.H.

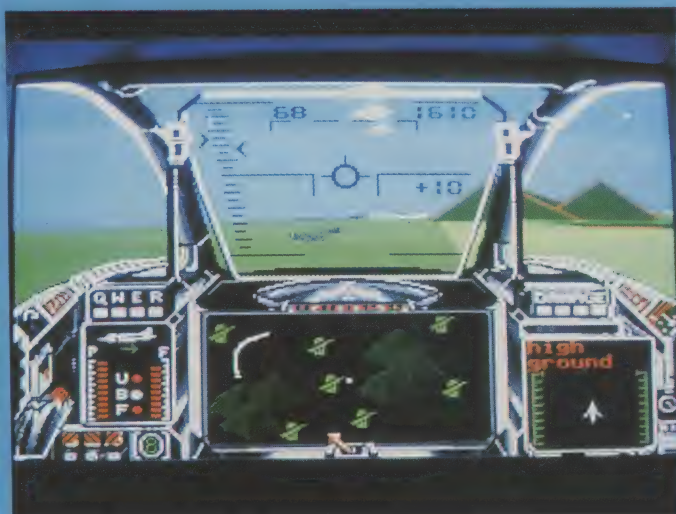
Graphics: 9
Sound: 8
Playability: 8
Value: 9
Price: £24.95



STRIKE FORCE HARRIER

Mirrorsoft's much acclaimed 64 flight simulation Strike Force Harrier has now been converted to the Amiga.. Andy Moss tests it in flight

Flight simulators are all the rage at the moment. It is not hard to see why really, as computers are tailor-made for them. Well, you already have a joystick to start with and if you just imagine your monitor to be a vdu on a flight deck instrument panel, you are nine tenths of the way to flying a real plane! Let's face it, everyone would love to be a real pilot, and for those of us not fortunate enough to live near a flying club (not to mention having the spare cash) a computer flight program is the next best thing. Given that option, we demand that the program be as realistic as possible, and given the restrictions of the hardware we make certain allowances. Sub Logic's classic Flight Simulator II slowed down to almost 2 frames a second when a lot of detail was present on screen, and the view from the window of the outside world was fair seeing that an 8 bit processor was driving it. We had to use



our imagination quite a bit to put ourselves into that cockpit position. With the advent of 16 bit technology and the mighty Amiga our expectations of flying programs grew, at last, we would see realistic views and fast processing.

Now Mirrorsoft have released an Amiga version of their 64 Strike Force Harrier. Would this do our great machine justice, and give us all a truly realistic simulation.

Sadly no. Harrier has once again fallen foul of the great conversion disease, and promises more than it delivers.

Instead of completely rewriting the program from scratch and really getting to grips with Amiga software, what has been done is a bit of interior design work, tweaked up the graphics and improved the sound, (although on my version the toggle for the sound on/off did not work). If you like the idea of a strategic shoot em up with a flight

"To reach the enemy HQ, you first need to destroy the enemy tanks surrounding your ground sites."

simulator to boot and have not seen the 64 version then Harrier is a worthy buy. Your objective is to bomb the enemy HQ which is some 125 miles away, whilst at the same time defending your ground sites from enemy aircraft and tanks, and advancing your forces accordingly. Of course, the Harrier differs from conventional planes in that it can take off or land vertically, which is very handy for landing on pretty hazardous terrain. To reach the enemy HQ, you first need to destroy the enemy tanks surrounding your ground sites. When you have done this, you select new site in an adjacent area nearer your destination. Of course this site will come under attack from new tanks, and these have to be destroyed before you can land, set a homing device which automatically moves your forces up, and then take off again to another sector, of which there are over 512.

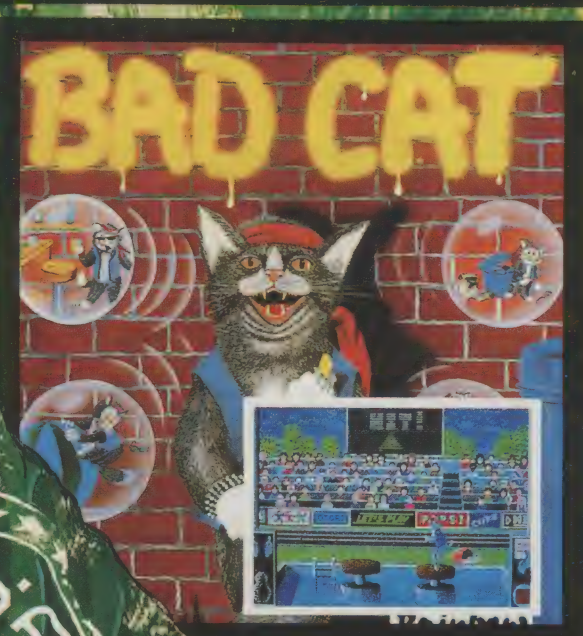
Flying the plane is a relatively simple affair and is undertaken by pressing the power button up to around 80% then on reaching 125 knots pulling back the stick to 20 degrees and raising the undercarriage. Like all modern aircraft, there is a HUD (Head Up Display) which is projected straight onto the cockpit window, and gives you information on speed, direction and pitch and height. There is additional information added in combat mode which gives you your bomb sight, the homing signal and missile sights.

My main criticism is the lack of realistic graphics, the mountains look like little pyramids, and the cloud cover is more like settled snow. The speed however is fairly fast and smooth, which is very important and saves the game for me.

Looming on the horizon however are Amiga versions of Stealth Fighter, Stealth Mission and Gunship, whilst Sub Logics JET has already been released. With such heavy weight opposition to contend with it seems to me that Harrier has thrown in the towel before the fight has begun, which is a shame as it is only the poor conversion which has let down a good game design. My advice is to save your money for Stealth Fighter, it will not be a long wait.

A.M.

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Almost a year after all the hype of the 8-bit versions and their saucy ads, the Amiga gets in on some of that head-slicing action with *Barbarian*.

Aiding deep beneath all the violence there is a plot somewhere: the beautiful Princess Mariana (as played by the curvey Miss Whittaker) has been taken prisoner by an evil sorcerer going by the name of Drax. He has announced that he will set her free if any one man can defeat his guardians. Many have tried and failed, now you, a last hope have arrived to save the day.

Played in one player mode, eight swordsmen must be slain before you meet up with Drax for the final encounter. In the familiar fashion of most karate games, you have sixteen moves available. These include body, leg, overhead and flying neck chops, head but, kick and web of death. The remainder are defensive blocks and dodges. A



BARBARIAN

Palace

two player mode has been included for settling arguments between friends.

All your opponents are armed as you are with a sword, and use the same moves against you. Each fighter has a strength level which decreases with every blow

The sounds of skull against skull, swords through flesh and cries of pain are incredibly realistic. Turn up the volume late at night and give the neighbours a fright!

you receive until either player collapses, helped on the way with a kick from the survivor. Where the Amiga version is superior to the 64 original is in the many sampled grunts, groans, thuds and clangs of the wild warriors giving it their all. The sounds of skull against skull, swords through flesh and cries of pain are incredibly



realistic. Turn up the volume late at night and give the neighbours a fright!

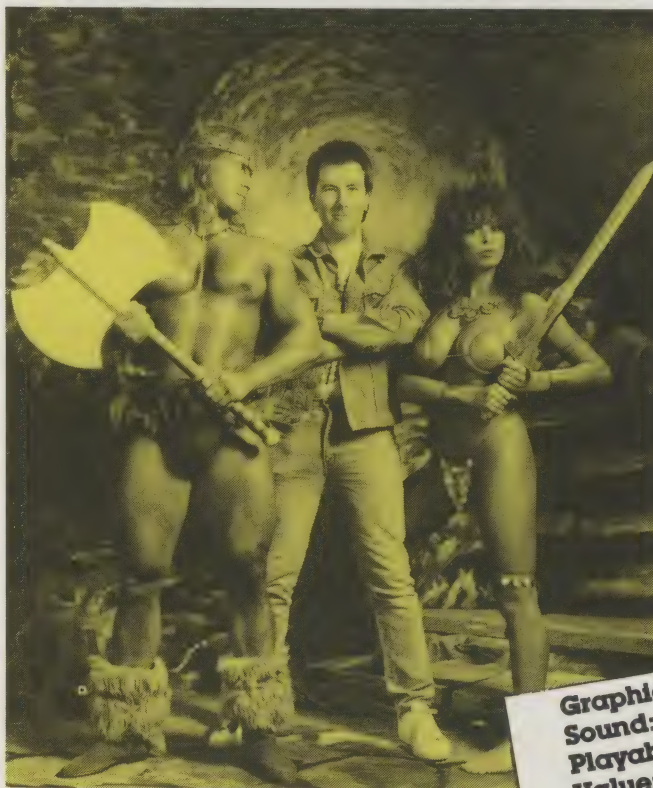
In all other departments, *Barbarian* has remained almost identical to the 64 version. It plays very much like the original, which I found to be satisfying but lacking in lasting interest. No advance has been made with the graphics, which are a little disappointing. When compared to those of Psygnosis' *Barbarian* they look very simple. Animation frames are rather more scarce than I would have hoped for, especially with half a megabyte to play with, and as the same sprites are used for all the swordsmen. The backgrounds the fights are set against only surpass the originals in terms of resolution. Some colour cycling could have given a decent flowing lava effect on the volcano, and perhaps some jeering spectators could have been included.

Barbarian is immediately playable, even with novice computer gamers. Because of

this and the attention-grabbing sound effects, it can be a very enjoyable for a quick game now and then. The satisfaction gained from slaying your

opponent with a flying neck chop makes it worth checking out, although twenty pounds for a 64 game with added samples is rather pricey.

T.H.



Graphics: 6
Sound: 9
Playability: 7
Value: 7
Price: £19.99



THE AMIGA GRAPHICS AND SOUND SPECIALISTS

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MICROTEXT

Teletext Adaptor

Television based information services are proving very popular in many countries around the world. Al Meric checks out a new package designed to make the most of these valuable systems

The world seems to be getting smaller all the time. Not so much because the different modes of travel have become faster but more because of the vast improvements and advances being made in the field of communications and information exchange. It is now possible to send a document, via an electronic mail system to the other side of the world in less time than it would take to write out the address on an envelope. These techniques are now starting to have an impact in our homes and in our lives.

In the U.K. an example of hi-tech information exchange can be seen on many television sets — Teletext. This is a system by which data is sent in some of the hidden lines at the top of a television image. These are, in turn, decoded by a small unit in the television and displayed as pages of information. The television's remote control unit usually doubles up as a keypad with which to pass instructions to the Decoder unit. Each of the four U.K. T.V. channels contains several hundred pages of information ranging from the latest Dow Jones index to a kids jokes page. Most European countries also have their own Teletext systems.

One of the few drawbacks with this system is that each page of data is sent

arrives before you have finished reading the first. Most units have a hold facility but this can often result in missing the next page altogether. With a ten page document it can become very infuriating having read the first two pages and then missing one and having to wait for the next 9 to pass before you are back in sequence. There is now, however, a device that will enable Amiga owners a number of ways around this problem — The Microtext teletext adaptor.

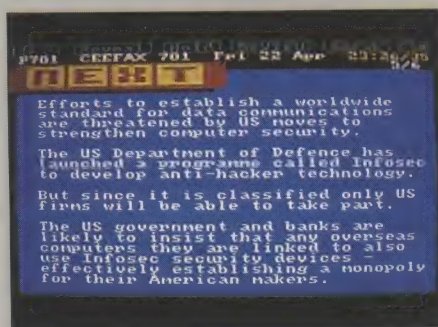
This is a small unit about the size of a modem. It comes with a separate mains power supply, a lead to connect up to an external monitor, a gender changer (to enable the entire Amiga range to work with it) and a manual. It connects to the Amiga via the Parallel printer port but unlike many other devices that use this port it also has a pass-through so that the printer may remain connected. It is in fact possible to have the printer working and the Microtext unit sending data to the Amiga, via the parallel port both at the same time! This is indicative of the care and thought that has gone into the design of this unit and its software. Connection to a TV aerial and attaching the external monitor lead to a monitor (only required if a separate TV pictures is required) completes the hardware installation.

The software is inserted at the Workbench prompt and the Microtext icon selected. You are presented with a requestor asking you which country you are in so that the necessary hardware and software configurations can be made. The system then automatically locates any TV signals with teletext signals and assigns them the correct channel numbers (units for use outside the UK will ask for each channel number). This information is then saved to disk and you will not be required to enter it again unless you specifically request to. At this point you will be rewarded with teletext page 100 of channel 1.

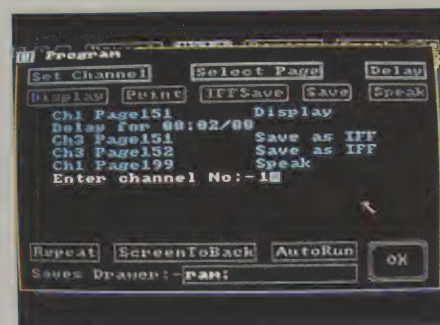
Channels may be changed with one of the drop down menus or via the 'F' keys. Pages may be selected in one of four different ways: by entering a new three digit page number with the numeric key pad, by clicking on either the '+' or '-' gadgets which will take you to the next or previous page respectively, by clicking at any page reference that may be on the screen or finally by selecting one of the 'Fastext' options at the bottom of the page. Most people will not have heard of Fastext nor used it as it is only just starting to make an appearance on televisions. It is a system where the next few pages that you are likely to want to view are automatically received while you are still reading the main page. They are then instantly available should you require them.

"It also has, however, many options that conventional systems do not provide."

All the usual facilities provided by a TV teletext system are provided including; reveal, hold, subcodes, etc. It also has, however, many options that conventional systems do not provide. It is these that make the Microtext system so versatile and which help to overcome



sequentially, with the more popular pages being sent more often. The problems arise when a multi-page document is being read and the next page



some of teletext's shortcomings. An overview of Microtext's special facilities follows:

MICROTEXT

Review — The last sixteen pages received are automatically stored in the Amiga's memory and can be instantly recalled at any time by selecting the review gadget.

Speak — Pages of information can be read out by the Amiga's built in speech facility. The Microtext software, however, pre-processes this information before it passes it to the Amiga to sort out words and phrases like 'Mr' and 'USA' which would otherwise be incorrectly interpreted.

Save/Load — Pages may be saved to disk in a compact format (over 800 pages per disk) suitable for reloading into Microtext or in a format suitable for editing etc., by IFF compatible art packages such as Delux Paint.

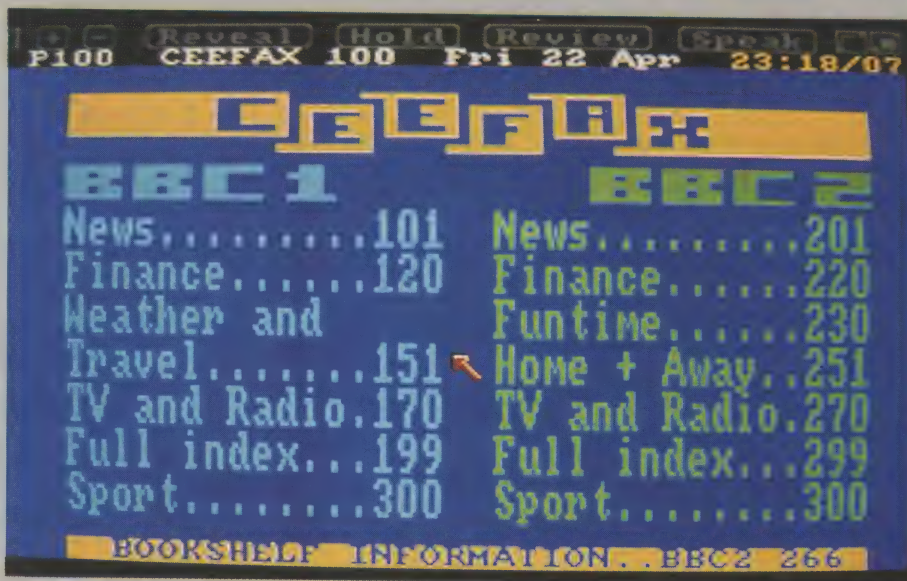
Print — Pages may be printed out as they appear on the screen using a graphic screen dump option or as text only. The text only mode has the

"It is possible to program the system to automatically run through a sequence of pages."

advantage of being much quicker and will work with any printer regardless of whether or not it has any graphic capabilities.

makes the Microtext package a very good buy — Programming. Using this feature it is possible to program the system to automatically run through a sequence of pages at a preset time. It

kind of report etc. The possibilities are endless. For those of you who started to panic when the word programming was mentioned, do not worry. Programming the Microtext system involves no more



can print these out, save them to disk or recite them in any order you care to choose. Variable time delays of up to 99 hours can be incorporated into a program making it possible to leave the system unattended while it waits for and then retrieves the information you require.

Because the Amiga is a multi-tasking

than clicking gadgets on the screen and entering page and channel numbers.

As an added bonus it is also possible to use the Microtext system as a TV tuner. Using the lead provided it is possible to connect the unit to a separate monitor and have TV sound and vision on it while teletext is displayed on the Amiga's monitor. Alternatively if the Amiga's monitor has a separate composite video input the lead may be

"It is also possible to use the Microtext system as a TV tuner."

attached to this and then the TV mode may be viewed by operating the Composite/RGB switch.

If you are lucky enough to have teletext in your country and would like to make the most of it, then a Microtext teletext adaptor would be the ideal solution. The hardware is well built, it has excellent software and it is well documented. What more could you want?

A.M.

Price: £124.80 + VAT.

CONTACT: Microtext, 7 Birdlip Close, Horndean, Hants. Tel: 0705 595694.



Of the above modes; Review, Save/Load and Print could all help to alleviate the problem of missing pages I mentioned earlier. There is, however, one other very special facility included in Microtext that has a whole host of applications and which on its own

machine and the Microtext software is 'well behaved' it is possible for the Microtext system to save pages of information to RAM or disk while at the same time another program running in the background, reads in that same data and then processes it to produce some

AMIGA BITS & BYTES

The Amiga has now been with us for some time. However, due to its user friendly interface, many users still find themselves in the dark when it comes to using the CLI and some of its other less intuitive facilities. Jorgan Palmby has come up with a bag full of hints and tips to make your life easier.

A Quick Way into the CLI

Boot up the Amiga with Workbench in the normal way. As the Workbench is a program that is loaded, it is possible to interrupt the loading process and break into the CLI. To do this hold down Control and hit the 'D' key when the screen changes to BLUE (keep the control key depressed).

Two short tips for users of Ruby-View

- 1) Try selecting the full frame option when sending from the Edit window, this speeds things up a bit.
- 2) When using the Directory Editor – To clear the prompt fields completely . . . Try CTRL SHIFT 2 (ie CTRL @).

Hidden Messages

Hold both the SHIFT and ALT keys then press each of the F keys. At the SAME TIME watch the title bar. Next hold down both sets of SHIFT and ALT and also F1. Then with your third hand put any non Workbench in DF0: and watch the title bar.

Faster BASIC

Like many BASIC systems, the Amiga-Basic has a few oddities that can be exploited to speed up your Basic programming.

- 1) NEXT is faster than NEXT n
- 2) Multistatement lines are faster than commands on separate lines, ie FOR A = 1 TO 10 : PRINT A; : NEXT

3) INTEGER numbers are very fast, why use floating point for loops? You may have to do a bit of scaling but the speed improvement is well worth it.

4) REMS are big trouble. If they are on their own line they are very slow. However, if you use the ' as a REM then beware that is even slower!

Making space on the Workbench disk

There are lots of utilities that are available on the various PD library disks and you may want to install some of them on your system disk. You will find that the system disk (Workbench) is very nearly full, so you will have to get rid of some files on it to make a bit of room. You must be careful as to what files you delete, as the Amiga operating system makes use of a fair number of them, so delete the wrong files and you might get a nasty message! Here is a list of files that you can delete without too much bother or worry.

In the **C** directory you can delete any files as long as YOU or another PROGRAM do not need them. Likely candidates for deletion are: ED, EDIT, DISKCHANGE, FILENOTE, JOIN, PROMPT, PROTECT, RELABEL, SAY, SEARCH, SORT and WAIT. The **DEMOS** directory can be completely erased, as it only contains the four demo programs. The **DEVS** directory has several areas ripe for pruning but take great care as it also contains many files that are vital to the operating system.

O.k. to delete are: **Keymaps**, delete all bar those you use. For example, I only use the USA 0 and the UK keymaps. All the files in the **Printers** sub directory can be deleted except for the ones that you use. Likewise in the fonts directory. Leave the **LIBS** directory alone. The **System** directory also has some files that can be erased. GRAPHICDUMP, ICONED, SAY, and CLOCK can all go. Keep the **T** and **TRASHCAN** directories as they are small and useful. In the **Utilities** directory there are two files, NOTEPAD and CALCULATOR. If you don't use them they can both be deleted. If you delete all these files you could recover as much as 400K of disk space, so it is well worth the effort. N.B. ONLY WORK ON A COPY OF THE SYSTEM DISK. YOU WOULD LOOK VERY SILLY BEGGING A NEW COPY OFF SOMEONE IF YOU MESSED IT UP!

External Drive disable

There are some programs that do not like external drives being attached. This is sometimes due to the memory that the disk needs for its buffers or due to some clever anti-copy protection. Whatever the reason, it can sometimes be useful to turn the disk off, especially if you only have a 512K machine. The solution . . . fit a switch in series with pin 21 of the disk lead. This is the df1: select line. If you have more than one external drive then the other select lines are pin 9 for df2:

AMIGA BITS & BYTES

and pin 20 for df3. Once the drive has been allocated you will need to reset the Amiga if you want to remove it from the system, this is the only simple way of deallocating the memory for it.

NOTE – ANY MODIFICATIONS TO THE AMIGA OR ANY EXTERNAL HARDWARE MAY INVALIDATE YOUR WARRANTY – SO BE CAREFUL.

Disk Errors

If you are ever unfortunate enough to get the System Message "Read Error Can't Validate Disk" you may no longer be able to read any data on that disk . . . and that could be a disaster. However, using a good Workbench disk enter the following commands in the CLI and it might save the day:

```
MAKEDIR RAM:1
COPY DF0:1 RAM:1 ALL
ASSIGN L: RAM:1
```

This will force the Amiga into using the disk validator that you have just put into the RAMdisk. If you are lucky you will be able to read your disk long enough to be able to MAKE A COPY!

Where are you?

If you can not remember where you are in a directory tree, just use the CD command

```
CD (cr)
The syntax of the returned message is
<diskname> <sub-dir1> <sub-dir2>
...
```

Serial Port Initialisation

At some time you are likely to want to set up the serial port from the CLI. This is very easy, just Type RUN SER: this will set up the port to allow data to be passed. NOTE: to run some programs you may need to reset the Amiga if you have RUN SER:

Printer Cables!

If you buy a printer cable BEWARE! Make sure that it is for the Amiga. The Amiga has +5V on pin 14 and many printers will Ground this pin, thus shorting out the Amiga's PSU. Be especially careful of IBM printer cables.

Shorter Copy Commands

There is a way to enable several files to be copied at once instead of using a separate copy command for each file. COPY DF0:C/ECHO|FAILAT|COPY TO ram:c
The '|' (found on the key to the left of BACK SPACE) acts as a file separator and the COPY command acts on each file in turn.

File Protection

It is very easy to prevent the accidental erasure of files. It is also possible to set other forms of protection on them as well if you wish. The command to do this is PROTECT, the options are:

```
R=Read
W=Write
E=Execute
D=Delete
```

The command syntax is – PROTECT <file-name> [R] [W] [E] [D]

So to make a file 'read and execute only' use the format:

```
PROTECT filename RE
```

This will prevent the file being written to or deleted. To allow the file to be written to or deleted use: PROTECT filename RWED.

Editing and the CLI

If you call the editor ED or EDIT when working from within the CLI, you will find that the CLI will no longer respond to commands. There are two ways to overcome this:

- 1) OPEN a new CLI window by typing NEWCLI in the current CLI.
- 2) Use the RUN command to start the EDIT or ED program as a separate task. This will leave the CLI active. The syntax is:
RUN ED <filename to edit>

Emergency Mouse

Sometimes the mouse can be a hindrance, especially if you are using a keyboard intensive program, i.e. a word-processor. The following keystrokes will emulate the mouse and would also be useful if your mouse died!

Pressing the left or right Amiga key and a cursor key will move the mouse pointer in the direction of the cursor key. Holding down the shift key at the same time will increase the speed at which it moves. Pressing the right Amiga and Alt keys together is the same as pressing the Right mouse button. Pressing the left

Amiga and Alt keys together equates to the Left Mouse button.

To answer a requester, press the left Amiga key and V to RETRY or press the left Amiga key and B to CANCEL.

Speeding up DOS

Because each DOS command has to be loaded from disk EVERY time it is used, it would make sense to put the most commonly used ones into the RAMdisk but still retain access to the others on the system disk. To do this create the following short execute file with:

```
ED s/Fastdos
Then enter the following lines:
echo "Installing FastDos"
mkdir ram:c
copy sys:c/cd to ram:c quiet
copy sys:c/copy to ram:c quiet
copy sys:c/delete to ram:c quiet
copy sys:c/dir to ram:c quiet
copy sys:c/endcli to ram:c quiet
copy sys:c/info to ram:c quiet
copy sys:c/newcli to ram:c quiet
copy sys:c/run to ram:c quiet
copy sys:c/type to ram:c quiet
copy sys:c/install to ram:c quiet.
echo "file copy done"
path reset
path add ram:c
path add sys:c
assign c: ram:c
echo "system installed"
```

Next press ESC and then X to save the file to disk. You may add or delete files to the above and adjust it to suit your needs. Make sure, however, to keep an eye on the size of the RAMdisk, especially if you use it for other things.

To activate Fastdos enter: EXECUTE Fastdos

You can add this command to the startup sequence if you always want it to be activated.

Tips were compiled from many sources including . . . Soley Sixty-Four, Micronet, CCI, AUI, Compute! books, Abacus Books, IPCUG, CBM reference guides . . . and more.

J.P.

Quote of the month

"We're still in negotiations and all that's really been decided is that nothing can be decided until July.

Philip Breindel — Marketing manager, Burocare Computer Systems." C.T.W.

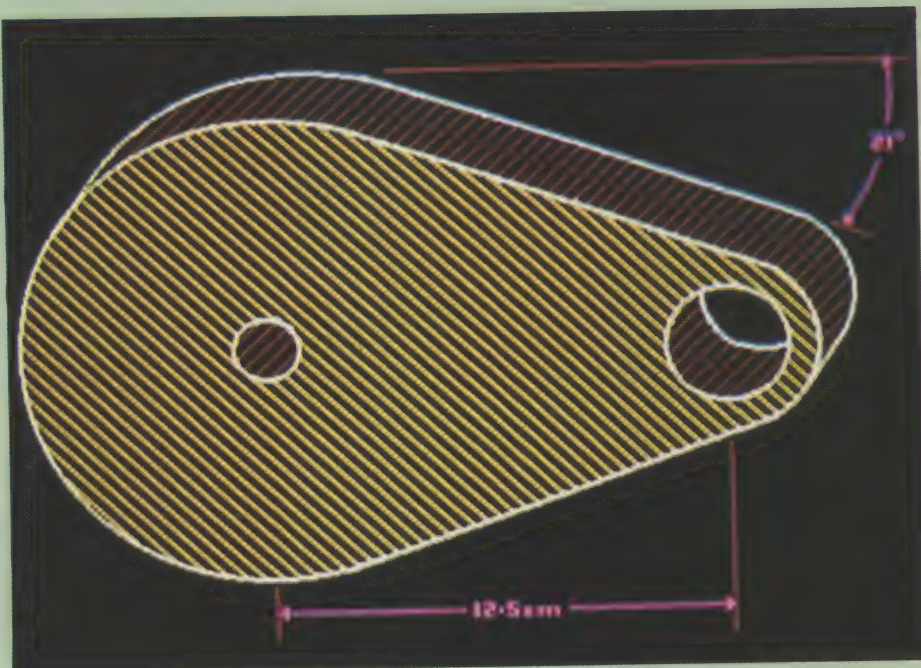
VECTOR GRAPHICS

Most Amiga owners will have used one of the amazing art packages currently available. There is, however, another side to graphics — Les Cooke tells all.

There are two different systems used for drawing graphics on a computer: bit-mapped graphics and vector graphics. Bit-mapped graphics is the method used by the majority of home computer applications. Most main-frame applications, however, use vector graphics. For example, 'CAD' — Computer Aided Design. This is a system in which the designer has abandoned his traditional drawing board, pencils and paper and has taken up a screen, mouse and stylus instead. The designer now draws his design 'on a computer', rather than on a sheet of paper. Among the advantages of such a system is that the picture can be changed easily. Lines can be erased, moved, rotated, copied. Such operations are not restricted to just lines; complete parts can be treated in the same way. Furthermore, the picture will be able to be drawn on different graphic devices (such as screens, plotters and matrix printers) without its overall SHAPE changing — although its SIZE may.

In a bit-mapped system, the information held internally to represent the picture is a matrix, or grid, or bits. The size of the matrix depends on the particular computer, the resolution required and the number of colours required in the picture. The more colours required, the more bits are needed to describe each position in the matrix. On the Amiga, the matrix is 320 wide by 200 deep for low resolution pictures, 640 by 200 for medium resolution and 640 by 400 for high resolution. These figures are applicable to screens that conform to the NTSC television standard. For screens that conform to PAL standards, the depths become 256 and 512. The depth of the matrix is tied to the number of lines scanned by the particular television standard.

One of the disadvantages of the bit-mapped system is that the appearance of the picture can alter according to the physical characteristics of the screen being used. This manifests itself on the Amiga as the unused portion of your screen when showing a picture generated with American television standards in mind. Using a matrix with a depth of 200



fills a screen working to NTSC standards (in low or medium resolution), but it does not fill one working to PAL standards — that requires 256.

"Any picture can be constructed from lines, even curves, as these can be broken up into a number of small straight lines."

A vector graphics system overcomes this kind of deficiency by storing completely different information. Any picture can be constructed from lines, even curves as these can be broken up into a number of small straight lines. These lines are, to over-simplify, known as vectors and it is from this that the method is named. It is these vectors that are stored in a vector graphics system. The information describing the vectors is completely independent of the screen on which the picture will be shown and it is this that gives the vector system one of its advantages over the bit-mapped. Let us look at this in more detail.

Pictures are constructed from basic building blocks. These are called 'primitives'. Different systems will implement different sets of primitives but most of them will include the following: MOVE, LINE, ARC, AREA, MARKER and TEXT.

MOVE positions the 'pen' at a given position on the grid. LINE draws a line between two points on the grid. ARC draws a curve, AREA causes an area bounded by LINES or ARCs to be filled. MARKER draws a specified symbol at a point and TEXT draws a string of characters. Note that ARC, MARKER and TEXT may be further broken down, internally into numbers of lines.

"A segment is a bundle of primitives that share the same attributes and that can be manipulated in one operation."

Each primitive can have an attribute associated with it. An attribute is something that controls the way in which the primitive is drawn. They are used to set colour, line width and line type (dotted,

continued on page 50

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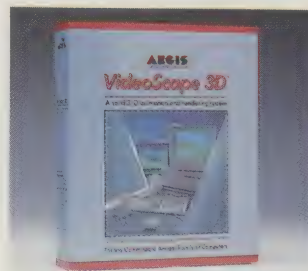
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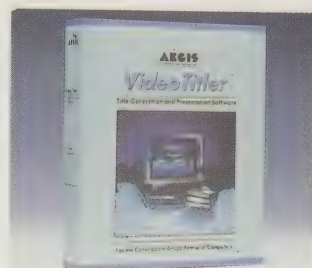
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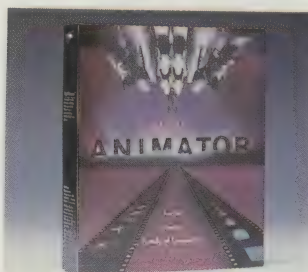
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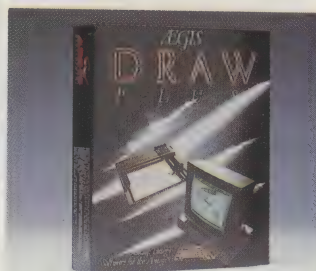
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VECTOR GRAPHICS

dashed, etc). Text size, angle and type are specified by attributes.

Groups of primitives can be bundled into segments. A segment is a bundle of primitives that share the same attributes and that can be manipulated in one operation. If you wanted to draw a widget, you would use a number of primitives (lines and arcs) to do so. Suppose you now want to turn this widget through 180 degrees. If you had packaged all the primitives used to draw the widget into a segment, you could achieve this by turning the segment through 180 degrees in one operation rather than by operating on all the primitives separately. If you want another widget you can simply copy the segment.

The picture can be built from any number of segments, each segment having its own unique identifier and characteristics.

All you need now is a system to specify where the primitives and segments are going to be placed. To do this Vector Graphics provide you with a coordinate system. This is usually a system where any point is described by its horizontal and vertical position. Imagine a piece of graph paper with a grid running from 0 to 100 in both the horizontal and vertical axes (directions). The middle point of that grid would be described as location 50,50. The coordinates used in vector graphics are often known as 'world coordinates' and the area covered by the world coordinates is usually called the 'window'. Try not to confuse this 'window' with the windows you open up on the Amiga. Although they have similarities, they are quite different. The coordinate system usually specifies the horizontal position first, followed by the vertical.

"Bundled primitives can be treated as one 'super primitive'."

OK, let us draw a red square with vector graphics, bundling all the lines together so that the entire square is one segment:

- 1) set world coordinates 0 to 100 in the horizontal and vertical axes; 2) set red;
- 3) open segment 'SQ1'; 4) move to position 0,0; 5) LINE to 0,100; 6) LINE to 100,100; 7) LINE to 100,0; 8) LINE to 0,0;
- 9) close the segment.

Does this draw a square? No. It draws a rectangle. The reason for this is that most screens are not square and although you specified the same coordinate range in both the horizontal and vertical axes, the length of those axes is not the same. Thus you get a rectangle whose

aspect ratio (ratio of height to width) is the same as that of the screen on which you drew the picture.

To avoid this, a method is given so that you can control the aspect ratio of the area covered by the world coordinates. This area is usually called the 'viewpoint'. To ensure that a square is produced by the preceding example you must set this aspect ratio to 1:1 before defining the world coordinates.

Now we will go over it again, but this time starting from the top. First, you define a viewpoint. This establishes an area on the screen in which you will draw your picture. You can specify the size and aspect ratio of the area and the position it will occupy on the screen (perhaps you want the area in the top right of the screen only).

Next you define a window. This overlays an imaginary coordinate system, or grid, over the viewpoint. You will use it to establish the position at which parts of the picture are drawn.

Now you can draw your picture using primitives. You can bundle the primitives into a segment so that the bundled primitives can be treated as one 'super primitive'. You can control colours, line thickness, line type and text styles with attributes.

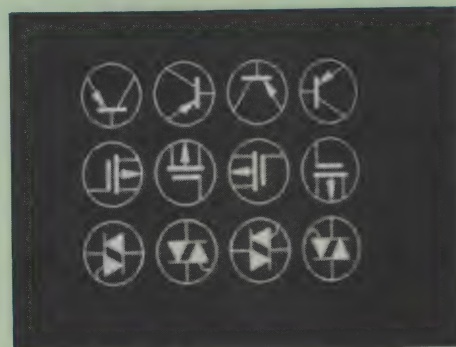
While you were issuing all those drawing instructions, the vector graphics system was building up a string of data in storage that contains an encoded form of the drawing instructions you have issued. This is called a 'metafile' in some systems.

For example, suppose you issue: MOVE 0,0; LINE 0,100. The internal representation of this might be X'A1 0000 0000 A2 0000 0064' where 'A1' and 'A2' are MOVE and LINE respectively and the pairs of half words are the horizontal and vertical coordinates.

When you come to show the picture, the metafile is scanned by the system, the individual drawing instructions are interpreted and the required primitives are drawn by turning on the appropriate bits in a bit map — a process known as 'rastering'. The bits in the bit map will control the 'pixels' on the screen. You might think we have gone to a lot of trouble just to end up with a bit map but unless you are drawing to a plotter or a directed beam screen, both of which can understand drawing vector commands, this step is necessary.

This method allows the picture to be shown on different types of screen, provided that the system has enough information about the screen to enable

it to construct a bit map that matches the screen's requirements. It needs to know, amongst other things, the width and depth of the screen and the number of pixels per inch in the horizontal and vertical directions. On some mainframe systems, the screen does have this ability to tell the graphics system this information. With it, the system will be able to ensure that your square will always be a square regardless of the type of screen it is shown on. In addition, it can ensure that your square is always, say, 4 inches square.



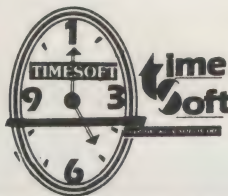
In addition, the metafile allows easy and rapid manipulations on the entire picture, a segment, or just one primitive. If your original window coordinates were 0 to 100 in both directions and you changed them to 0 to 25 in both directions maintaining the same sized viewpoint then, when you output the picture again by re-scanning the metafile, the effect would be to zoom in on the lower left corner of the picture. Similarly, you could zoom out by giving the window coordinates a larger range, pan across the picture, or scroll up or down.

Segments and primitives can be changed by adjusting the coordinates of those internal drawing instructions that relate to the segment or primitive. This is achieved by applying a transformation to those coordinates that 'draw' the primitives which make up the segment. A transformation is just a mathematical process that is very handy for this kind of manipulation. A transformation can be used to enlarge, rotate, move, flip, or shear a segment or primitive.

Which is best, bit-mapped or vector? It depends what you want to do. For interactive 'technical' graphics, which tend to require two dimensional and three dimensional transformations — vector graphics. For 'art' graphics, with their dither area fills and perspective shading — bit-mapped. In an ideal world a software package would combine the two but in the real world it looks as though if you want the benefits of vector AND bit-mapped then you are going to have to dig deep into your pockets and buy a program for each.

L.C.

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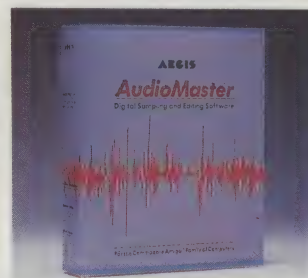
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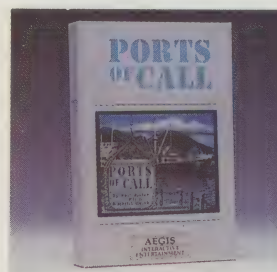
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ART

Amiga Designers



Rumours started to circulate during 1987 that solid 3D animation packages were about to emerge for the Amiga. A package called Caligari, which would turn the Amiga into a machine that would rival the more expensive mini-computers was just around the corner. A package, much cheaper than Caligari actually appeared shortly afterwards. Videoscape 3D arose out of a collaboration between its author Allen Hastings and Aegis Development Inc. Allen had so impressed the audience at a US computer show with his 3D animations, that Aegis had approached him with a view to marketing a 3D program. The resultant package has had a large impact on ARTBEAT, a graphics company run by Jacki Hearle, who had already developed Amiga design skills.

While DPaint requires artistic skills, Videoscape requires technical knowhow. The artist has a barrier to overcome. Used to translating thoughts and images via skillful manipulation of the physical, an understanding of the purely theoretical becomes necessary. Those who are most used to programming do not have the same barrier to cross; they have a different one, 'knowing what to do'. Without the artist/designer we are back to the fast cars and spaceships. Under the direction of a designer great things can be achieved. What ARTBEAT believes it has managed to achieve is 'synergy', an environment where each individual can learn



BEAT

and develop from working in close co-operation and contribute to make the whole greater than the whole.

For the last six months ARTBEAT has been working closely with Gary Whiteley (formerly Del Meurto Promotions, now 33 Video), who has recently been creating material for Channel 4 and is involved in a number of Amiga video projects. ARTBEAT is also the European PAL beta-tester for Videoscape 3D 2.0. This package, soon to be released, contains many new features not found in version 1 or 1.10. Registered users will be supplied with the upgrade free of charge (so don't bother phoning ARTBEAT!). At this moment it is putting together a showreel of work and demonstrating the different styles of the animators.

Other plans include television advertising and promotional videos. The prospects look very good. And the Amiga? A cut price machine does not mean a cut price operator. In many instances the restrictions imposed by the machine require more effort and insight to overcome than those of a more expensive, 'dedicated', system. What the machine does mean in business terms is a reduced overhead. Whether a design house owns its own facilities or hires them in when required, the cost is passed on the client. This isn't to say that companies should rush out and buy the computing thinking it is so clever it will program itself! As an entry machine for computer art/animation the Amiga is unbeatable. But without talented and motivated individuals the machine will never realise its potential. Contact: Jacki Hearle, ARTBEAT (0268) 289384



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AiRT

An icon driven programming language sounds somewhat unlikely. This is just, however, what PDJ Software have produced. Les Cooke put it through its paces.

Say "goodbye" to complicated commands, incomprehensible instructions, spleen-venting syntax and meaningless mnemonics! Say "hello" to 'AiRT' and programming by pictures. AiRT is a programming language that uses pictures, in the form of icons, to allow you to "write" your program. Each picture, or icon, represents a command and when a number are put together these form an actual program.

All you have to do to write your program is: pick the appropriate icon that will perform the function you want, put it into the correct position within a grid, attach some parameters, repeat the process until the program is complete and that's it! No need to remember how to spell the commands. No need to worry about whether you have matching braces, the correct number of parentheses, commas in the right places, or whether you have left out any semicolons. All you need worry about now is getting the logic right and that can sometimes be easier than the syntax.

AiRT provides: an animated and talking demonstration, a manual, an editor, a compiler, a print utility, a forms editor, some sample programs and a method of calling other programs.

The demonstration is an AiRT program itself, using digitized and synthesized speech and animated and interactive graphics. It takes you through the basic components of AiRT and shows the process of creating a program. It ends with a sliding-tile puzzle program with good sound and graphics. It is a useful demonstration and shows that AiRT does support a lot of the graphic and sound capabilities of the Amiga. Unfortunately, I found the synthesized speech unclear and had to strain hard to hear what it was saying.

The manual is generally OK but I did find Chapter one a little ambiguous. In one page, it attempts to explain what a program is, the function of a compiler, the nature of 'fields' and data types and structured programming. The rest of the manual goes on to describe the parts of AiRT in general, followed by Chapters describing each part in further detail.

There is a Chapter that takes you through creating, compiling and running a small program. This is followed by an Appendix that describes each command, or icon, in detail. There are a number of diagrams to explain the layout of the panels used.

You write your AiRT program with the AiRT editor, by placing icons into a grid. This grid is divided up into 75 'frames', each of which is divided up into 75 'cells'. A cell is addressed by its frame and cell number. This corresponds to a statement label in other languages. Each cell can contain one icon, or statement, so the maximum size of an AiRT program is

'In spite of it being a pictorial language, comments are still important.'

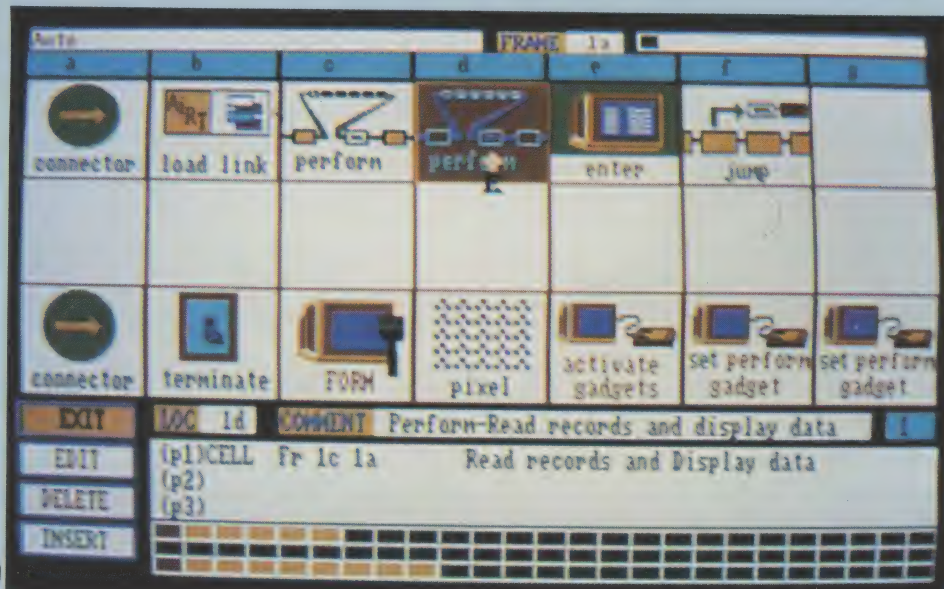
5,625 icons. Some of the icons are quite powerful, so you are not limited to trivial programs with AiRT. The icons are gathered together in 16 groups, with each group containing icons with related functions. For example, group 4 contains arithmetic operations.

When you invoke the editor, the first thing shown is the frame map. You use

this to select an empty frame or an existing one. After you have selected a frame you will be shown a part of that frame's cell map. Each cell is quite large so you can see only 25 of the 75 at any one time. You can, of course, scroll the map. At the bottom of the screen is an area showing the icons from one of the groups. This area can be scrolled through the icons a group at a time by a sliding gadget.

To 'write' a statement you choose the icon you want by clicking on it and putting it into the appropriate position by clicking on a cell in the grid. A new screen is then displayed to allow you to supply and define, the data items that will be used by the icon when it executes. In addition, this screen gives a brief description of the icon's function, shows which parameters are required and which are optional and allows a comment to be associated with the icon. The comment can be seen when looking at the cell map. In spite of it being a pictorial language, comments are still important.

This process is repeated until you have finished your program. The editor provides a number of functions: 'overlay' puts a selected icon onto a cell replacing any existing icon - this is the default mode, delete removes an icon, insert does what it says. A fourth operation,



continued on next page

AiRT

'collapse', removes an icon from the grid and closes up the gap. At the same time, should any icons (such as the 'jump' icon) contain references to others whose cell address has changed, the editor will alter the reference to reflect the changed cell address. This also happens with the insert function.

All in all, the editor is easy to use and contains the required edit functions.

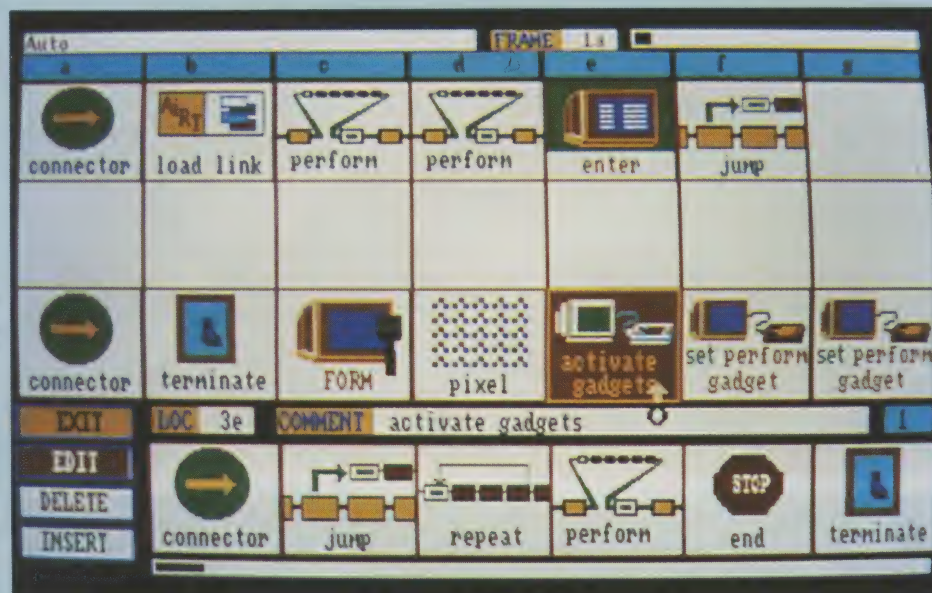
Compiling is easy. You just click on the compile icon (not to be confused with the AiRT programming icons). A small window opens up showing the status of the compilation and any errors. Errors are also shown in a log (notebook) file. I had an error in my first attempt and I found it impossible to understand the cryptic message. This puts AiRT on a par with just about every other language I have used.

In any way, it is merely a backcloth to enhance the usability and visual appeal of your data entry panels. Imagine – you can enter data into King Tut's eyeballs! AiRT provides special icons to handle these forms. I found it very easy to use.

Your AiRT program can even call an external program. This is provided by a mechanism called 'User Linkups'. Icons are provided to use linkups; a load Linkup and a call Linkup. The program being called must support the same parameters structure as 'C'. Four sample linkups are provided: BobLinkup handles Bobs – Blitter Objects; FontLinkUp gives access to Workbench fonts; SoundLinkUp gives the ability to play IFF sound files; and MiscLinkUp has a number of functions including mouse pointer control and chip and fast memory interrogation. This Linkup mechanism is very useful

special Amiga functions. I was disappointed to see that one or two useful instructions were not implemented: 'case', 'do until', 'do while', 'do expression', 'if then else'. The manual often uses the term 'structured programming' and implies that AiRT will assist in creating well structured programs. I find that without these constructs, implementing a well structured program is often awkward and untidy. AiRT does, however, allow subroutines by way of its 'connect' and 'end' icons.

'These icons should allow most normal programming tasks to be executed and, in addition will allow access to some of the special Amiga functions.'



Running your program is just as easy. You click on the new icon generated as a result of the compilation. There is a bit of a delay while it gets going but I have known worse.

If you want to print your program you just click on the print utility icon. This brings up a window that allows you to control what is printed. You can choose to have a text only print of your program, or you can have the icons printed graphically. The fields defined and used by the program can be included, or you can have the fields on their own. You can print the entire program or just one frame. Another option is to print the icons sideways in banner mode.

AiRT provides a 'forms' editor and this is very useful. It allows you to take an IFF picture and lay over it gadgets and areas into which text can be entered and/or displayed when the program you have written is running. The picture is not used

and proves that AiRT is not just a toy.

A number of data type are supported by AiRT: strings of variable length, small (2 bytes numeric), large (4 bytes numeric) and float (8 bytes numeric). A number of data items (fields) can be collected together into a record which is extremely useful. Without the concept of records that contain fields of different data types file handling would be so tedious as to be unworkable. Arrays, however, are not supported, a great shame.

A wide range of instructions are provided; they are grouped into 16 sets. These provide: sequence control (jump, repeat and perform); screen operations; arithmetic operations; field operations; file handling; gadget operations; drawing and graphic functions; form operations; and linkage to external programs. These icons should allow most normal programming tasks to be executed and, in addition, will allow access to some of the

Is it easy to learn? Yes. Is it easy to use? Yes. Can you write a program quickly? That depends. It is slower than typing the statements of a conventional language, provided you are familiar with the syntax of that language. If you are not familiar with the syntax, AiRT does offer advantages. I did find it was slowed by frequent disk access but something like FACCI would help here. Is it easy to read? That depends on you. If you lay the program out well, yes but you can make a pig's ear out of it if you really want to. Does it make a good programming tutorial. No language, on its own, makes a good programming tutorial. After all you cannot learn German just by reading a German dictionary. You learn the words but how and when do you use them?

I think it is fair to say that an experienced programmer will prefer to stick to conventional programming languages. That may be partly because we tend to prefer to use what we learned first. However, someone who is feeling their way would probably find AiRT useful. I liked AiRT. Not only is it fun to use, it is useful as well. What more do you want?

L.C.

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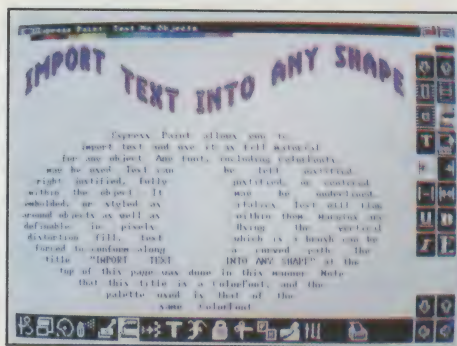


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CRP Graphic Tablet

Many artists around the world have found the Amiga a valuable graphic tool. Steve Rodgers, however, is still looking for a new input device.

What is it about the humble mouse that makes it so difficult for people to produce input devices that improve upon it? This is the second stylus/digitising-pad combination that I have tried, and like the previous one, its performance was still not really up to par.

Down to basics. The CRP is a pleasant two-tone plastic pad that measures 44cms x 28cms x 2.5cms, the colour scheme blending well with that of our A1000s. An outline of an A4 sheet (the active area) is on the left and there is a little recessed tray on the right for the storage of pens etc. and three ports at the back. These are:-

1. A 'D'-type nine pin connector which runs to the serial port of the Amiga.
2. A tiny DIN type socket for the stylus or optional puck.
3. A power input socket.

Also supplied with the pad was a stylus with two nibs (a ball point pen and a round ended steel one). A mains transformer, a sheet of cellophane to protect the surface of the pad and a clip to attach it with, and an unprotected software disc.

It is good that the pad has an independent power supply, as the Amiga has not exactly got much spare power, and the ball point pen tip for the stylus could prove very useful for tracing etc.

Setting the pad up is reasonably simple, but be warned! The transformer to pad wire has a connector in the middle of the wire which had separated in transit. The plug didn't mind which way round it connected so without really thinking I didn't bother to look for the tiny little '+' & '-' signs. This resulted in a fused, dead pad but provided an excuse to open the case to replace the fuse. The surface itself is a green PCB criss-crossed at 1cm intervals and a surprisingly large amount of electronics live on the right hand side. The fuse was replaced with one for a few pennies from a Hi-Fi shop and this produced a reassuring glow from the red LED on the pad.

Just plugging the pad in is not enough to get going however. Special software is needed to read the pad and move the pointer, this software also configures the pad, enabling it to be scaled. This means that the active area can be reduced if the

artwork to be digitised is smaller than A4, which is quite handy. The software is very compact and double clicking opens a window that remains open on the workbench all the time the digitiser is active – is this a good idea?

This window wants typed responses to several questions and defaults are supplied so carriage returns are generally enough.

These questions include whether or not you are using an A3 or A4 pad and whether or not you wish to scale the pad. Once the last question is answered the pad is active until the number 4 key is pressed when the questions are repeated, you can quit the software and use of the pad at this stage.

So how does it work? We tried it with several packages, but most people would want to use it with Deluxe Paint so that is what we concentrated on.

The best uses for this tablet are for tracing flat artwork and sketching, and it could also be used for inputting the coordinates in a package such as Sculpt3D. Working in HiRes in DPaint II we found that sketching worked well, but frequently the stylus outpaced the pointer. This rarely happens with the mouse. We also found that the system locked up quite often – necessitating a re-boot. The major plus with the system is the pen nib, although we wonder about the availability of replacements.

In conclusion we feel that the CRP digitiser has some advantages over the mouse, if you are prepared to work quite slowly and use the mouse and keyboard for menu selections. To a certain extent one is freed from constant referral to the screen and this can be quite refreshing for the eyes. We would like to see a more responsive system and a method of doing menu selections from the same device, perhaps a contact on the pen itself.

As full time Amiga users we have been waiting for a stylus system to replace the mouse for some time. The CRP digitiser gets half way there – well mostly half way. **S.R.**

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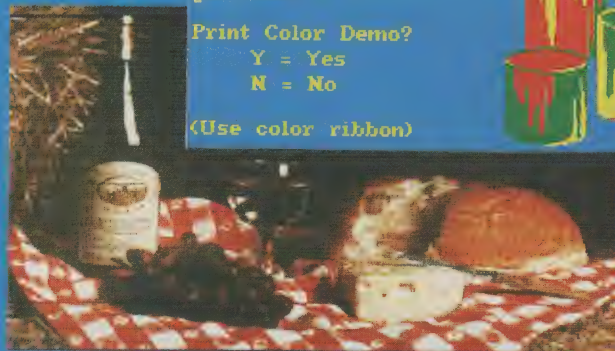
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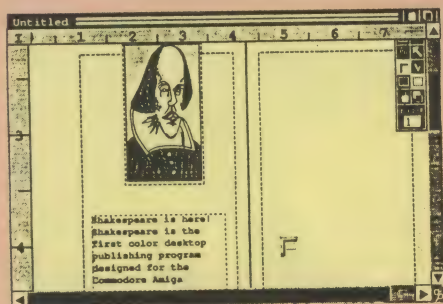
This long awaited desk top publishing program has finally made it to the streets. John Walker, himself an author of DTP books gave it a thorough examination and came up with some surprising comments.

Shakespeare had a quote to cover the situation, as he always did: "Oft expectation fails, and most off there where most it promises".

The lines come from *All's Well That Ends Well* and no doubt Shakespeare, the first colour desktop publishing program for the Amiga, will end well. Its beginning, though, could have been better — it does not live up to expectations raised by its original, promising specification.

Infinity Software made the mistake of printing the packaging for Shakespeare six months ago, before the program was ready. As a result, features mentioned on the packaging and in Infinity's advertising of the program do not yet exist.

Missing are: Four colour separation for camera-ready printout, a graphic toolbox to draw dashed lines, circles and ovals, a variety of fill patterns to put behind text, graphic design templates on disk, and snap-to grids to make it easier to design page layouts.



Of these, the four colour separation module is now completed and will be added to the first revised version which should be available shortly. The absence of a snap-to grid remains a major drawback. At the moment, if you are working on a page layout that contains two or more columns, you may find it difficult to align the columns correctly. The only guide the program provides is a ruler at the top and the left-hand side

of the screen.

With a snap-to grid, of course, the columns "snap" to a fixed position so that the text in each column lines up across the page. Shakespeare even lacks an ordinary layout grid that can be superimposed on the page to help arrange text and graphics in a pleasing design — an extraordinary deficiency in a program aimed as much at corporate users as individuals.

The manual's advice on aligning lines of text in two frames denotes the program's present amateurish approach: "An easy way to do this is switch to Low Resolution, and then count the number of pixels separating the lines of text in the frame above the one we just made. Then move the frame we just made to that the same number of pixels separate the first line of its text from the last line of text in the frame above it."

DTP programs are meant to simplify design, not reduce users to pixel counting operations.

"Even when you mix several different graphics using different palettes on the same page, each will print correctly."

Shakespeare, though, is a necessary purchase for anyone who wants to produce complex colour publications on an Amiga, since it has no real rivals. It does handle colour graphics very well, keeping in memory the palette used for every graphic so that even when you mix several different graphics using different palettes on the same page, each will print correctly. It also allows you to change all or some of the palettes used.

The program comes in a tall, slim box containing a tall, slim manual and two unprotected disks, one containing the main program and printer drivers, the

other a limited range of clip art and the bonus of some extra fonts.

The manual is nicely designed and printed, and has a good, comprehensive index. Much of it is filled by three tutorials which take you fairly painlessly through the program and explain how to design a flyer and a two column newsletter. It would have been improved by including hard copy of the program's clip art and fonts.

The art consists of a selection of unexciting graphics of computers — including pictures of the three variations of Amiga and its monitor — holidays, money, music and signs. The eight fonts range from the Art Deco Broadway to Keys, which resembles the Amiga's key-tops. Also included are some multi-colour fonts with shadow or 3D effects.

Different styles that can be applied to the fonts include italic, bold and underlined but there is no outline style and drop shadows have to be added to text by creating the same words in a different colour and offsetting them.

Shakespeare will run on any Amiga with a 1.2 Workbench, although using several fonts and multi-coloured graphics can quickly eat up available memory — in RAM and on disk. If you want to create publications containing many pages, you'll need an Amiga with expanded RAM.

Infinity describes Shakespeare as a "page integrator", a term which indicates its main function — to combine words and pictures on a page. The only graphic tool provided is one that allows you to add rules, borders or hollow or coloured boxes.

You can type text directly onto the page in whatever font you choose. The words can be deleted, cut and pasted, set to the left or right margins or fully justified, but there are no advanced editing facilities such as search and replace, spell checking, or index or contents page creation.

Text can be imported from most word processors, including ProWrite, Scribble!, Textcraft and WordPerfect. Control codes are stripped so that type styles in the original text, such as bold or italic, will be lost in the transfer.

Graphics need to be in IFF format, and you can use illustrations with up to 32 colours created with such programs as Deluxe Art and Aegis Images. In order to print correctly, they should be drawn either in low (320 × 200 pixels) or high (640 × 400) resolution — and must be saved as brushes. You cannot use HAM graphics with their 4096 colours, which, unfortunately, rules out high-

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Not only will Project D copy Amiga format discs it will also copy ST Format disc (better than copiers on the ST), IBM format discs. CP/M format discs & Unix Format discs. If you've got a 5.25" drive this makes it ideal for putting software on to 3.5" format.

Publishing Partner Profesional

The best DTP Programme on the Amiga by a very large amount. Not available yet but demonstrators are available on the old version which we have used for over 9 months. New version includes some features you would not believe or expect even on the mighty Mac.

PHONE FOR DETAILS & DEMONSTRATION

Starboard 2 — probably the best memory upgrade for the Amiga series

Why do we think the Starboard is the best memory board on the Amiga? Well, really you can use it on all 3 models of the Amiga (there is an A500 and an A1000 version of the Starboard and you can get an A2000 adaptor for either version if you upgrade). You can have versions with 0K, 512K, 1MB or 2MB RAM, and each version is upgradable so you can use your own RAM chips if you like. There is also the option to use a 68881 maths co-processor, partly checked RAM, 'slicky' RAM-Disc and onboard clock and there is also a hard disc controller to fit inside the Starboard at under £100 due out soon. You can also have up to 4 Starboards connected together to make up to 9MB Total RAM. This is just a brief description of what the Starboard can do, phone or write for more details and pricing.

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SHAKESPEARE

quality digitised images. You can crop and re-size graphics on the page.

"You can use illustrations with up to 32 colours created with such programs as Deluxe Art and Aegis Images."

Shakespeare allows you to work in four resolutions: low, medium (640 × 200), high and interlace (320 × 400). The problem with the high and interlace modes, of course, is that they produce the dreaded flicker on the monitor screen. Fortunately, you can switch resolutions easily, either from a pull-down menu or by pressing a couple of keys, so that it is probably best for most of the time to work in medium resolution, which has no screen flicker, switching to high to provide a proper preview of the finished result.

If you have enough memory you can load a separate program which displays a complete page so that you can judge the overall effect of your layout.

The program requires 1.3 Workbench printer drivers or a PostScript laser printer. As Commodore has yet to release its new Workbench, versions of printer drivers from the Gamma 7 version of Workbench 1.3 are included on the program disk. Only the MPS1000, Diablo 150C, EpsonQ, EpsonX, Okidata 293 and Xerox 4020 drivers will print pages wider than eight inches.

On booting, Shakespeare provides a display that will be familiar to anyone used to other page-orientated desktop publishing programs — a blank page with rulers at the top and left-hand side and a toolbox down the right-hand side. Measurements on the rulers are in inches or, for those used to printing conventions, in picas, which are equivalent to a sixth of an inch. (Incidentally, there are 12 points to a pica, not six as Shakespeare's manual states.)

Text and graphics are contained in frames that you draw on the page. A frame can contain either words or an illustration, but not both. Text flows automatically from one frame to the next. Shakespeare makes it easier to draw frames to the precise dimensions you require by allowing you to constrain either the horizontal or vertical measurement. So, once you have got a frame to the right width — say 2 inches — you can keep it at that width while drawing it out to the right length.

After you have created a frame, you can use a copy command to make another the same size and then move it into position. This process is needlessly

clumsy. The better DTP programs allow you to define the size and number of frames by entering measurements in a requester-box. After that, the program draws the page and its columns automatically. With such programs, once you have defined the layout of one page, you can automatically create further pages conforming to the same layout.

Shakespeare has no such shortcuts. The default settings for pages cover only their overall size, the unit of measurement and the dots per inch resolution that will be sent to your printer.

In setting the defaults for frames, you can specify the colours to be used, the drawing mode and the size of the frame. What is annoying here is that the size of the frame is measured neither in inches nor in picas, but in pixels, which seems very silly. Even then, a new frame appears in the upper left of the page and has to be moved into position with the mouse. It is at such times that a snap-to grid would be a godsend.

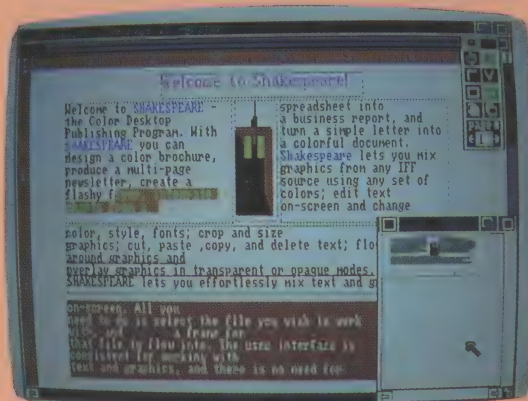
The colours you can specify include that of the border and of the background. In the same way, you can set default

both operations, according to whether it is placed on the corner or within the frame. As it is, there is a lot of to-ing and fro-ing from the tool-box as you fine-tune a layout.

Infinity claims that you can flow text around graphics. Unfortunately, this is not an automatic process — as it is in many DTP programs where you can simply put a picture on the page of text and have space immediately created for it.

In Shakespeare you either have to draw frames to contain text either side of the frame that contains the graphic or you put the graphic in position and then move the words out of its way a line at a time, using the return key. This is slow and clumsy, and no substitute for the real thing.

Although its inclusion of a PostScript laser printer driver suggests that Shakespeare is intended for professional use, it lacks such typographical essentials for high quality output as automatic page-numbering, automatic hyphenation (breaking words correctly at the end of lines) and kerning (reducing space between characters).



colours for the text, and also for its justification, leading and font. You can change any part of the text to the default settings simply by highlighting it.

Both frames and text can be set up with different drawing modes — for example, to print not in the colours selected but in complementary or inverse colours. This enables you to achieve dazzling, not to say psychedelic, effects.

There is an additional clumsiness in the way the program handles the re-sizing and movement of frames. In order to re-size, you have to click with the mouse button on an arrow icon in the tool-box and then change the size by pulling the frame's corner. To re-position it, you need to click on a hand icon in the tool-box and move the hand within the frame.

As re-sizing and re-positioning are activities that often follow on from one another, it would have been simpler had Shakespeare used the same tool for

Shakespeare is worth buying only if you need publications in colour. There the results will depend upon your printer as much as the program. Without its four colour separation facility, you cannot produce camera-ready results for printing professionally.

At the moment Shakespeare does not live up to its title, although it remains a program that may one day deliver its promises. At the moment, it would have been better named after the bard's second rank contemporaries. But, then, I don't suppose that something called Beaumont & Fletcher would have had quite the same sales appeal.

J.W.

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3 1/2

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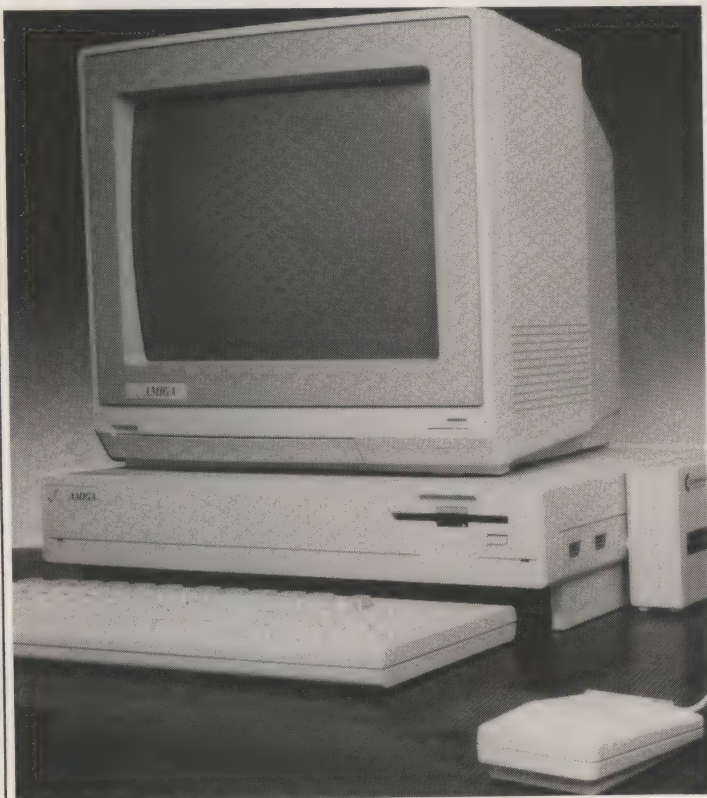
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JAY MINER continued



ports. Special purpose multiport chips like the video ram will continue to evolve and we will see multishift register ports for dumping many of these datatype bidirectionally and simultaneously. So keep your eye on video ram and on the next generation of Amiga computers that will probably use it.

Why was the Amiga a success?

It was a success, you know, even though it stumbled. The first year it sold almost as many as the Macintosh did in its first year and the Macintosh didn't have all the competition we have now. I believe to be successful you have to give value. Personal success requires giving value to what you do. Product success requires giving value to the product. Companies usually fail when they stop giving value and they become greedy.

It wasn't essential to have 256 logic functions in the blitter. It wasn't essential to have a 4DMA channels on the blitter. Or 4 DMA

channels of stereo audio. Or eight sprites. Or 4000 colours. Hardware linedraw was definitely overdoing it. People would buy it anyway! I was told this over and over and over again. To a certain extent it is true. They will buy lesser quality for a while. And if it is cheap enough.

I believe though that eventually the quality product will win. Because costs will come down with time but the quality will still be there. There is a rule of thumb that your selling price must be three to four times your costs. And this is generally a good rule. However if I should add another 512K of ram to a product why should I charge the customer three times what I have to pay for it? It didn't increase my development costs. It didn't increase my marketing costs. This is just another way to gouge the customer instead of giving value. I believe the Amiga is a success because it is really terrific value!

He turns away. The man is regarded as most responsible for the development of the best small microcomputer in the world. Will he ever work on such as project again? He shrugs and smiles grimly 'You never know!'

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FRACTAL LANDSCAPE

Phil Wilkes

Mathematics plays an ever increasing role in the production of computer graphics. Phil Wilkes' Amiga Basic program creates some very impressive landscapes using an interesting fractal algorithm.

Many of you will be familiar with the idea of fractals – shapes or designs which show more detail the closer they are examined. One of the most common examples in the computer world over the last few years is the Mandelbrot Set. This was 'discovered' by Benoit Mandelbrot and many programs to display and investigate it have been written for the Amiga. Several are available in the Public Domain (eg Fish #5, Amicus #20).

Perhaps slightly less well known is the application of fractals to model natural phenomena such as trees, coastlines and mountains. Using fairly simple fractal programs, very complex and yet realistic images can be generated. There is one relatively simple method of producing fractal landscapes on the Amiga.

"If you want to avoid all the theory and plunge straight into the program, type it in as follows. Look on the Extras disk

such as DeLuxe Paint. I have used this routine to enable saving of the fractal landscape screens.

Double click on SaveLBM and once the program has started, stop it by pressing the right-hand Amiga key together with the full stop. Display the listing window and use the block delete function to erase from the beginning of the program but not including the line 'SaveLBM:'. Your AmigaBasic manual will tell you how to do this if you are unsure. Now type in the listing before the SaveLBM: line. Finally, save the program as 'FRACTALS' – don't just select SAVE without a new name or it will overwrite the original SaveLBM program.

When the program is run, the screen will clear and the program will report on finding the libraries (BMAPS) it needs for the screen save routine. These are already on the Extras disk and should present no problems. It then requests a Landscape Number.

This is simply used as a seed for the random number generator. When seeded with a specific starting number, the sequence of random numbers then produced is always identical. This allows landscapes to be repeated if required.

The next input requested is the recursion limit. This specifies how finely the landscape is divided. Inputting '1' will give the most detail in your landscape but will take the longest time to run. Other numbers can be used for giving less detail or for testing the program (as they run that much quicker).

The final input required is a name for the file to be used for saving the image generated by the program. Just pressing return will mean that the image will not be

saved. I have written the program so that images are saved in the 'lo-res' directory and so may be used directly with DeLuxe Paint.

The program then works without further interaction. Be patient! If you run with the recursion limit set at 1, the program takes about one hour to finish. It first generates the data for the landscape, displaying its progress as a contour map on screen. Once all data has been generated, a three dimensional view of the landscape is produced. This is saved automatically when this phase is finished. If you want to save the picture on a different disk to the program disk and you only have one drive, it is quite safe to change disks while the program is running. As written, the image will always be saved to the 'lo-res' directory on the internal drive (df0:).

Fractal Theory

OK – so much for how to run the program. Many of you will be interested to know how it works. I will first describe the general method of creating fractal landscapes and then detail some of the features of how my program actually goes about its task.

The standard method (or algorithm, to use the jargon) to create a fiscal landscape is as follows. First, consider a square and set each corner to a random height (Fig. 1). Now divide each side of the square into two, and set the mid-point of each side equal to the average height of the end points, plus or minus a random amount. Finally, consider the centre point of the square. Take the average height of the mid-points just calculated and again



supplied with your Amiga (it is best to use a copy – always keep your originals safe!). In the drawer called BasicDemos you should find a program called SaveLBM. This is a demonstration of how to save screens in IFF format suitable for loading again into programs

add or subtract a random amount.

What you now have is something like Fig 2. Notice that you have taken a simple shape and added detail. Also notice that the shape now consists of four smaller squares which are essentially the same as the original large squares. So more detail can be added by subdividing those squares and repeating the process to make even smaller squares and so on, theoretically without limit.

This then is a three dimensional fractal surface in which smaller details have similar properties to the larger contours. In order to achieve this, the degree of randomness must reduce as the size of the square being considered reduces. I related the random amount to the length of the side of the square. By making this proportionally larger or smaller, rougher or smoother landscapes can be modelled.

This algorithm for producing fractal landscapes can be used as the basis for programs in any language or indeed on any machine. The easiest and most elegant way to program it would be to use 'recursion'. This is a routine which calls itself and is illustrated in the following 'pseudo-code':

```
SUB landscape (x,y,s)
```

CALCULATE MIDPOINTS

```
landscape (x,y,s/2)
landscape (x,y/2,s/2)
landscape (x,y/2,s/2)
landscape (x/2,y/2,s/2)
END SUB
```

Having calculated the midpoints, this pseudo-code calls itself four times, once for each of the four smaller squares now established. The length of the side of the square(s) reduces by half each time the routine is called.

There are two problems with the above approach. Firstly, and this applies to any implementation, the routine has no limits. This is easily corrected by checking the size of the side of the square and not calling the routine for any smaller squares once a predetermined limit is reached.

The second problem is that many computer languages do not support recursion and AmigaBasic is one of them. In order to implement the algorithm in AmigaBasic, a slightly different approach needs to be taken.

Further Ideas

The second half of the program deals with turning the raw data into a three dimensional image of the landscape. It is beyond the scope of this article to go into detail on 3-D projections which are produced by considering each small square in turn and plotting it as a filled rectangle using the AREA and AREAFILL statements. The image is plotted from the back to the front, so that closer land masses will obscure more distant ones in the correct manner.



A couple of routines worth noting are AREACHECK and setcolour. With most of the AmigaBasic graphics statements, if an attempt is made to plot outside the window area, no error is generated and the statement is performed as though the screen window were an actual window on a larger drawing surface. Unfortunately, this does not happen with AREA and AREAFILL which cause an error to be produced if a point is defined outside the current window. The AREACHECK routine therefore checks all coordinates before plotting and brings them into range if necessary.

The setcolour routine is the portion of code which determines the colour in which each rectangular area is filled. It finds the largest gradient in the square and selects a colour by comparing the angle of that gradient to the vertical. Thus the light source for every scene is

assumed to be overhead. Although the actual maths used are approximate, the end results look quite good. The colours have been defined to give a range of greens for fairly flat areas but some browns for steeper areas. This gives the effect of broken rocky ground for steep inclines.

The program as it stands is not perfect but it can produce some stunning landscapes, which can easily be enhanced

by a suitable paint program (eg DeLuxe Paint – see some of the example pictures). Some ideas for enhancement might be:

- allow the user to select the angle of illumination;
- allow the user to select the viewpoint from which the scene is produced;
- use different colours to give different feels to the landscapes – range of greys could be used for a lunar landscape effect;
- use a different scaling factor to produce rougher or smoother landscapes;
- use the fractal algorithm to generate more detail for closer areas so that the squared nature cannot be seen.

These are just some of the many variations which are possible. Whether you want to experiment with any of them, or just sit back and let your Amiga produce some pictures for you, have fun and perhaps share your best results with AUI!

P.W.

```
REM - Fractal Landscapes
REM - by Phil Wilkes October 1987

REM - This program creates fractal landscapes and may
REM - save screens as an IFF ILM file.
REM - (Graphicraft, Deluxe Paint, etc.)

REM - No icon is created for the saved file.
REM - If you need one, copy the .info
REM - file of a Graphicraft pic and
REM - call it filename.info

REM - Requires exec, graphics and dos
REM - .bmaps (Use new ConvertFD)
REM

Main:

CLEAR ,90000&
DIM h(128,128), stack%(100)

REM - Functions from dos.library
DECLARE FUNCTION xOpen& LIBRARY
DECLARE FUNCTION xRead& LIBRARY
DECLARE FUNCTION xWrite& LIBRARY
REM - xClose returns no value

REM - Functions from exec.library
DECLARE FUNCTION AllocMem&() LIBRARY
REM - FreeMem returns no value
```




Through Amiga User International Magazine you can play the enhanced European version of Discovery Software's terrific new game about which our review says

"Apart from the Discovery logo and option to start on any of the first 20 levels, it may as well be straight out of the coin-op!"

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[illegible]

Please allow 28 days for delivery.

USER PORT

```
CLS
PRINT TAB(10); "FRACTAL LANDSCAPES"
PRINT TAB(10); " by Phil Wilkes"

PRINT:PRINT "Looking for bmaps ... ";
LIBRARY "dos.library"
LIBRARY "exec.library"
LIBRARY "graphics.library"
PRINT "found them."

PRINT:PRINT
INPUT "Enter Landscape Number (1 to 65500) : ", lscape
ln=lscap-32760
RANDOMIZE ln
PRINT:PRINT
INPUT "Enter limit of recursion(8,4,2,1) : ", limit%
PRINT:PRINT "ENTER FILESPEC:"
PRINT "( Do not save if your disk has less than 41K free )"
PRINT "( Enter <RETURN> for NO save file )"
PRINT
INPUT "FileSpec for ILBM save file : ", ILBMname$
PRINT

REM Custom Screen
w = 320: h = 200: d = 5

AvailRam% = FRE(-1)
NeededRam% = ((w/8)*h*(d+1))+5000
crtDir% = 0
crtStart% = 0
crtEnd% = 0
crtSecs% = 0
crtMics% = 0

REM - Start of Main Routine
REM - Set four corners of landscape

d%=128
h(0,0)=RND*d%-d%/2-20 :CALL setpoint(0,0)
h(0,128)=RND*d%-d%/2-20 :CALL setpoint(0,128)
h(128,0)=RND*d%-d%/2-20 :CALL setpoint(128,0)
h(128,128)=RND*d%-d%/2-20 :CALL setpoint(128,128)
x%=0:y%=0

REM - Prime stack

stack%(0)=x%
stack%(1)=y%
stack%(2)=d%
spointer%=3
WHILE spointer%>0

REM - get area from stack

spointer%=spointer%-3
x%=stack%(spointer%)
y%=stack%(spointer%+1)
d%=stack%(spointer%+2)
a%=d%/2

REM - Calculate half points
IF h(x%+a%,y%)=0 THEN h(x%+a%,y%)=(h(x%,y%)+h(x%+d%,y%))/2+RND*a%-a%/2
CALL setpoint(x%+a%,y%)
IF h(x%,y%+a%)=0 THEN h(x%,y%+a%)=(h(x%,y%)+h(x%,y%+d%))/2+RND*a%-a%/2
CALL setpoint(x%,y%+a%)
IF h(x%+a%,y%+d%)=0 THEN h(x%+a%,y%+d%)=(h(x%,y%+d%)+h(x%+d%,y%+d%))/2+RND*a%-a%/2
CALL setpoint(x%+a%,y%+d%)
IF h(x%+d%,y%+a%)=0 THEN h(x%+d%,y%+a%)=(h(x%+d%,y%)+h(x%+d%,y%+d%))/2+RND*a%-a%/2
CALL setpoint(x%+d%,y%+a%)
h(x%+a%,y%+a%)=(h(x%,y%+a%)+h(x%+d%,y%+a%)+h(x%+a%,y%)+h(x%+a%,y%+d%))/4+RND*a%-a%/2
CALL setpoint(x%+a%,y%+a%)
REM - Add quadrants to stack if limit not yet reached
IF a%>limit% THEN
CALL stackadd(x%,y%,a%)
CALL stackadd(x%+a%,y%,a%)
CALL stackadd(x%,y%+a%,a%)
CALL stackadd(x%+a%,y%+a%,a%)
END IF

REM - repeat until all points have been dealt with

WEND

REM - Set Sea level

FOR y%=0 TO 128 STEP limit%
FOR x%=0 TO 128 STEP limit%
IF h(x%,y%)<0 THEN h(x%,y%)=0
NEXT x%
NEXT y%

REM Display perspective view
scale=.7
v=h(64,128)
DEF FNpx(x%,y%)=160+(x%-64)*280/(130-y%)
DEF FNpy(x%,y%)=100-v-(h(x%,y%)-v-16)*scale*280/(130-y%)

CLS
startline%=0
FOR y%=0 TO 127 STEP limit%
endline%=0
x%=startline%
WHILE x%<128
```

```
GOSUB setcolour

REM - Draw area

nx=FNpx(x%,y%):ny=FNpy(x%,y%) : IF nx>310 THEN endline%=1
CALL AREACHECK(nx,ny)
nx=FNpx(x%+limit%,y%):ny=FNpy(x%+limit%,y%)
IF nx<0 THEN startline%=x%
CALL AREACHECK(nx,ny)
nx=FNpx(x%+limit%,y%+limit%):ny=FNpy(x%+limit%,y%+limit%)
CALL AREACHECK(nx,ny)
nx=FNpx(x%,y%+limit%):ny=FNpy(x%,y%+limit%)
CALL AREACHECK(nx,ny)
AREAFILL
IF endline%=1 THEN x%=128
x%=x%+limit%

WEND
NEXT y%

REM - Save screen as ILBM file
IF (ILBMname$<"") THEN
ILBMname$="df0:lo-res/"+ILBMname$
saveError$=""

GOSUB SaveILBM
END IF

Mcleanup:
WINDOW CLOSE 2
SCREEN CLOSE 2

Mcleanup2:
LIBRARY CLOSE
IF saveError$ <> "" THEN PRINT saveError$
END

SUB setpoint(px%,py%) STATIC
SHARED h()
IF h(px%,py%)<=0 THEN Col%=2 ELSE Col%=31-h(px%,py%)\4
PSET (80+px%,30+py%),Col%
END SUB

setcolour:
REM - Select colour

IF h(x%,y%)=0 AND h(x%,y%+limit%)=0 AND h(x%+limit%,y%)=0 AND h(x%+limit%,y%+limit%)=0 THEN

COLOR 2
ELSE
maxdiff=ABS(h(x%,y%)-h(x%+limit%,y%))
IF ABS(h(x%,y%)-h(x%,y%+limit%))>maxdiff THEN maxdiff=ABS(h(x%,y%)-h(x%,y%+limit%))
IF ABS(h(x%+limit%,y%)-h(x%+limit%,y%+limit%))>maxdiff THEN maxdiff=ABS(h(x%+limit%,y%)-h(x%+limit%,y%+limit%))
COLOR 16+COS(ATN(maxdiff/limit%))*15

END IF
RETURN

SUB stackadd(x%,y%,d%) STATIC
SHARED stack%(),spointer%
stack%(spointer%)=x%
stack%(spointer%+1)=y%
stack%(spointer%+2)=d%
spointer%=spointer%+3
END SUB

SUB AREACHECK(sx,sy) STATIC
IF sx<0 THEN sx=0
IF sx>310 THEN sx=310
IF sy<0 THEN sy=0
IF sy>186 THEN sy=186
AREA (sx,sy)
END SUB
```


This month the UK Amiga User Group, represented by Yuri Large, have answered your technical letters.

Dear AUI

I wonder if you would be so kind and clarify for me a number of questions I have regarding the Amiga 500.

- (1) Could I connect my Commodore MPS802 and DPS101 printers directly to the Amiga without the need of an interface of some sort?
- (2) How good is the TV modulator or would you recommend that I purchase a Commodore colour monitor?
- (3) How compatible is the IBM emulator in percentage terms. Will it run MS-DOS and IBM Cobol and Pascal?
- (4) How good is the C64 emulator?
- (5) What would you recommend is the best size for a second disk drive, 3.5" or 5.25", and why?

I would be grateful for any additional information you may be able to supply me as I will shortly be starting on a System Analyst/Programming course concentrating on the IBM version of Pascal and Cobol and I must decide whether to buy an Amiga which can emulate an IBM or to go for a totally different machine which will be able to meet my needs.

Thanking you in advance for your help
Yours faithfully

D. Stevens

Dear Mr. Stevens

(1) The Amiga will not interface directly to any Commodore serial printer, such as the MPS802 and DPS1101. It only supports standard parallel and serial printers directly. The only way to use a Commodore serial printer with the Amiga at the moment is through the use of the Ready-Soft 64 Emulator. However the drawback of this is that you can only print using 64 software running on the Amiga whilst in emulation mode.

(2) The Commodore A520 modulator gives surprisingly good results on most televisions, and even gives a readable picture in 80 column mode. I would suggest that to obtain the best results from it that you use a television with a smaller screen. Obviously the results achieved can never be quite as good as with a monitor, but the modulator is for most people a very cheap and satisfactory solution to this problem.

(3) In my opinion the Amiga Transformer

is about 60% IBM compatible. It works best with text based applications such as word-processors, databases, etc. The major drawback of this emulator is its speed. It is unfortunately only about a quarter the speed of a standard PC. This means that for compiling any sort of program it is almost unbearably slow. However it will work with all the compilers I have tested with few problems.

(4) The better of the two 64 emulators was reviewed in the February edition of AUI, page 26.

(5) The best size for a second disk drive purely depends on what you will be using it for. For most people 3.5" drive is the best as then there are no problems of not being able to put 3.5" disks in the second drive; don't forget more and more programs are being produced which use two disks. However if you do plan to be using transformer with your Amiga, it would seem that a 5.25" drive is a good idea. Unfortunately 5.25" Amiga drives are quite expensive at present, and the one I have tested did not work with the Transformer at all. The moral of the story is try it before you buy it.

The A500 with Transformer is at the moment not the best solution to having IBM compatibility with the Amiga. At the moment I would go for either an A2000 with bridgeboard or an A1000 with A1060 sidecar.

Dear AUI,

I recently bought an Amiga A500 and an Amstrad LQ3500 24 pin dot matrix printer, my intention being to use them for writing reports and projects (which include graphics and text) for the engineering course I am studying.

When enquiring about the compatibility of the LQ3500 with the Amiga I was assured that it would print both graphics and text, as long as the printer option on the workbench preference screen was set to Epson. However, while I have been able to print text using the 'draft' printing option I have been unable to obtain a 'graphic' print out with the notepad utility supplied with the computer or with Deluxe Paint I.

I have tried using all the driver routines for dot matrix printers (including Epson & Epson FX80) listed on the preference screen, and I have tried adjusting the dip switches on the printer but I have been unable to produce proper results. The LQ3500 manual does not help as it assumes that you are using the printer in conjunction with an Amstrad PC.

As the printer cost the best part of £400 I am starting to feel rather disillusioned. Please can you help?

Yours sincerely,

Mark Westwood

Dear Mark,

There are a number of options available to you. The first is to get a copy of UKAUG disk 5 (from the UKAUG), which contains about 60 printer drivers taken from the public domain. Among them there are five or six different 24-pin dot matrix printer drivers. Then it is obviously a question of try it and see. Another option is to get Fish disk 60, which contains v1.1 of a program called PrinterDriver Generator. This program asks for the escape codes that your printer uses and then generates a printer driver for you. Unfortunately it is not 100% successful. Finally, workbench 1.3 will be released during this year and Commodore says it will provide much better support for 24-pin printers.

Dear AUI

I am a new Commodore A500 owner, a novice, and I am finding two things very difficult in my programs. Whenever I want to save a picture from the Deluxe Paint onto my formatted disk, the requester will always say no existing drawer. I will be glad if you can solve this problem for me. Thanking you in advance for a favourable reply.

Yours faithfully

Michael Ogunbor

Dear Michael

Your problem can be solved quite easily. After formatting your blank disk for storing Deluxe Paint pictures, create three drawers in it called lo-res, med-res and

continued on page 72

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continued

hi-res. Creating drawers is detailed in the Introduction to the Amiga manual. Then when you want to store your pictures the program will save the picture in the appropriate drawer.

Dear Sirs,

Here is Mauro Benedetti again. Few days ago I wrote you a letter referring to your Virus Killer Offer. I also mentioned a new kind of virus, created by the so-called Byte Bandits, which seemed to be uncancellable from disk; yesterday I eventually found a way to eliminate it.

The new virus routine prevents block 0000 to be re-written by means of the command INSTALL DF1: (Workbench in drive 0 and disk in drive 1), or if the infected disk is to be re-installed using an utility program (the 'old' Virus Killer belongs to this category).

The news is that such "protection" doesn't work if the INSTALL command is directed to drive E0 from RAMdisk (this is very useful for single drive systems like mine).

I don't know whether this new virus will ever land in the U.K. or if you already know how to kill it; anyway I am giving you the steps to clear the infected disks.

(1) Identify the infected disk, which show the string "Virus by Byte Bandit..." in block 0000. For the purpose I use the program "Smartdisk" (sector edit/sector/search/000).

(2) Turn off the Amiga, wait a little and then power on.

(3) Load Workbench, open "System" Drawer and activate CLI.

(4) Copy INSTALL to RAMdisk with the command COPY DFO:C/INSTALL TO RAM:INSTALL

(5) Install the infected disks: RAM:INSTALL DFO:

(6) (Optional) Check again the disks with "Smartdisk".

Two words of warning: as you well know, the install command may destroy a program which uses the first two blocks (I lost "Terrorpods" in this way four months ago, thank you SCA); furthermore, being "Smartdisk" (or similar) is public domain software, I think it is at high risk too: check the "Smartdisk" disk at step 1 before going on.

See you.

Yours truly

Mauro Benedetti.

Dear Mauro

Thank you for the tips on the Byte Bandit virus. Just a couple of points to add. Firstly you must make sure that you boot your machine initially with a clean or virgin Workbench, otherwise the virus will be loaded into memory and copy itself onto every disk you place in the machine. I would recommend that you keep a copy of your Workbench that you never use and you know to be clean. For those of you that haven't heard of the Byte Bandit

virus, it operates in the same way as the SCA virus. However the symptoms are different. It does not give any messages it just crashes the Amiga at random intervals. So if your Amiga keeps visiting the Guru unexpectedly, check your disks. Finally, there is another very good disk editor on Fish disk 71 called DiskX, which is ideal for hunting out viruses.

Dear John

All there is left to say is that the same applies to Deluxe Paint II's predecessor Deluxe Paint.

In reply to your question, I know of two PD versions of Forth. They are Cforth (on Fish Disk 3) and Mountain View Press Forth (on Fish Disk 9). Of the two I believe MVP-Forth is the fuller implementation, but the great thing is that you can have a look at both without spending too much money.

Dear AUI,

As an owner of an A500, who is not prepared to spend over £100 on another programming language, I was hoping you could tell me the following:-

(1) Which languages are available in the Public Domain?

(2) How do they compare to commercial versions? (Particularly "C", "PASCAL", "COBOL" and "BASIC")

Also, what do you think the chances are of Amiga software coming down to a more reasonable price in the future?

Yours sincerely

Michael Cumpton

P.S. Great magazine, shame about the price.

Dear Michael,

Unfortunately there is not a huge range of languages available in the public domain as of yet. However, there are versions of Forth, C, Lisp, Modula-2, Assembler and Draco. Of these probably the best are the implementations of Forth, Lisp, Assembler and Draco. These compare very favourably with some of the commercially available languages. They do lack documentation though, and due to this it may take a lot of work before you get used to them. In years to come, I think we can expect to see far more PD languages of higher quality. Hopefully something like those available for the PC.

As for BASIC, you already have an excellent version on your extras disk. AmigaBASIC is very popular, and there are already several books written on it.

Amiga software is certain to come down in price as the Amiga grows in popularity. I think we can hope to see some favourable price changes very shortly. As for the price of AUI, we believe that if we offer value a higher price is worth paying. It seems that from the increasing number of readers each month, many Amiga users agree.

Dear AUI

Having read the "PD Reviewed" columns, I am very interested in obtaining PD software. However it seems impossible to do this if you are not a member of UKAUG or ICPUG; which I am not. I would be grateful if you could provide a list of shops in the UK who provide a PD service. There are many who do it for the Atari ST but I haven't found any yet who do it for the Amiga.

Yours faithfully

Robert Pocock

Dear Robert

There has been a great response to our series of articles on public domain software, most of them asking where they can get some from and how much it will cost them. Obviously the best way to obtain PD is to join one of the groups you have already mentioned. Both of these groups also supply complete lists of the PD software available from them. However, if you do not wish to join either of these groups you can obtain PD from a number of other sources. The UKAUG will supply PD to non-members for £5 a disk. Also George Thompson Services on the Isle of Arran will supply PD for £3 a disk.

Dear AUI

I see that confusion goes on about making a copy of Deluxe Paint II and perhaps this letter will clear things up. In the manual for Deluxe Paint II, Chapter One, 1.2, the instructions given are: "Your Amiga Users Guide has information on making copies. If you are using just the Amiga's internal drive, you should make at least two working copies of your original disk." So what on earth is all this talk about not write-enabling the original disk - surely it is never necessary to write-enable any disk that is being copied from rather than written to?

Like your correspondent P. Stewart, I too have without any difficulty whatever made two working copies of the Deluxe Paint II disk and they are fully intact and usable.

The protection of Deluxe Paint II is secured by making it impossible to copy the original disk to include the "key" that unlocks the system. The original disk is thus always the "key" that unlocks the system and has to be inserted every time before your own working copy can be loaded.

So everyone is correct. The whole of the original Deluxe Paint II disk cannot be copied and is simply used as a key at the appearance of a requester from your working copy - which you are specifically advised to make.

Best wishes to your favourite magazine **John Gray**

P.S. Do you know of any PD versions of Forth for the Amiga? The recent Forth from the USA looks good but is rather expensive.

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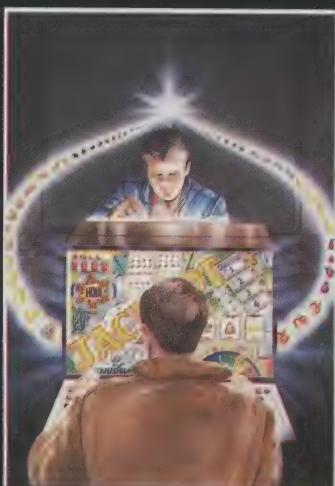
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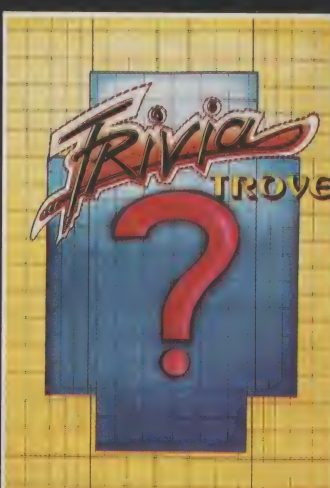
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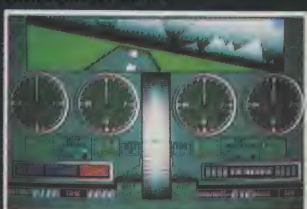
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CRACK

Linel

Linel are the Swiss software house specialising in Amiga games that brought us *Insanity Fight*. This showed-off their talents in all areas of game programming and won them the title of best Amiga arcade game. *Crack* is their follow-up and again takes an old idea and presents it very attractive way.

By now I have lost count of all the *Breakout* games going around, the computer game market across all formats has been flooded with them, and *Crack* is another in the same line. The bat moves along the bottom of the screen as usual, bouncing the ball onto easy to use, which saves any altered screen permanently on the disk, erasing the previous ones. noises set the scene before a gang of cuddly cavemen stroll onto the screen and chip out the name "Crack" on a rock face. This is followed by a vine-swinging would-be Tarzan, complete with his battle cry. Some sort of Barbarian style adventure looks on the cards, but the familiar *Arkanoid* screen that pops up next comes as a great disappointment.

The theme from the title sequence is carried through to the game. Instead of controlling a Vaus craft as in *Arkanoid*, you use a short length of bambo in just the same way. Patterns of coloured bricks make up each level with the odd glowing block here and there. When the ball hits one of these a ring drops down towards the bat, where it can be caught to gain one of a few extra powers. Laser fire, extra lives, extended bat size, explosions and double balls help clear the screen and jazz up the game. An autopilot mode temporarily plays the game by itself, one takes you to the next level and another gives a random feature such as reversed control or a mirror image of the bat.



There are two things that make *Crack* just a bit different from its rivals. First there are the excellent background pictures of prehistoric animals, although *Ball Raider* has some of equal quality. The second is the bonus game that comes up between every three levels. Here you control Herbie Stone the caveman walking left and right on a log, trying to catch falling coconuts. This does break up the rather monotonous *Breakout* part, but is really very simple. One problem I found that caused a lot of annoyance was that the ball gets lost in the background too often. A dark outline or glowing centre could have avoided this.

Two versions of a two player option are available: battle mode gives both bats free movement across the screen, and normal mode stops them crossing over. In battle mode, because the bats are identical it gets very confusing trying to figure out which one you are controlling. A construction set is included and is very easy to use, which saves any altered screen permanently on the disk, erasing the previous ones.

Linel are obviously a very talented team, proven by the quality of the graphics, sound and smoothness of *Insanity Fight* and *Crack*. However, it is a shame that they have spent their time on producing a game with little potential no matter how it turned out. They are thinking of developing Herbie Stone the caveman into a game which I hope they will do, it has a lot more going for it than another *Breakout* clone.

T.H.

Graphics: 9
Sound: 9
Playability: 6
Value: 7
Price: £19.95



JINKS

Rainbow Arts/US Gold

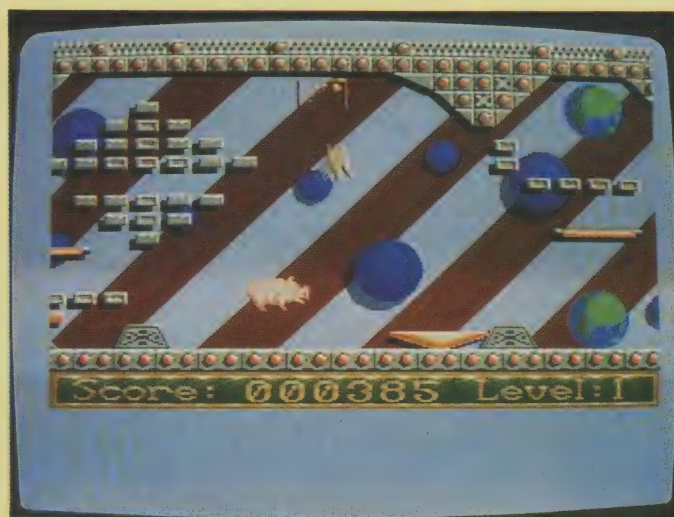
You may think there is no life left in the Breakout theme with so many clones around. This is probably true as far as direct Arkanoid clones go, but with Jinks, Rainbow Arts have added some ideas of their own and with some slick programming come up with an enjoyably light hearted approach to the bat and ball theme.

Four horizontally scrolling levels go to make up Jinks. Each has its own theme governing the obstacles they include. The basic set up is the same for each and consists of two planes of incredibly smooth parallax scrolling background. In the

it down to half the original size. Spinning bats marked with a red cross have the power to get you back up to full size again. A second collision in shrunken form spells the end of the game.

Once a level has been cleared, the following one is chosen by bouncing the ball into one of four sections. A good idea, but it can be a bit frustrating to bounce the ball accidentally back into the level you have just played.

Another Breakout would not make any waves now, something Rainbow Arts must have realised. Jinks succeeds because it is *not* just another Breakout,



background a pattern of disks and mice, moon craters or an abstract design serves to give a feeling of depth. The foreground is where it all happens; groups of bricks make up the majority of the screens with animated pigs, mouths, screws and symbols dotted throughout the gaps.

You control a bat, flat on one side and peaked on the other. Using both the angled and flat sides you have to bounce the ball from the far left of the level into a small goal at the opposite end. Gravity acting



and has enough additional elements to make it worthwhile. Its sharp smooth graphics are matched by some excellent twangs, bounces and slurps. All four levels are very varied but because there are only four, playing through them takes very little time, and so its attraction may wear off before long.

Now the Amiga games scene is really picking up. Despite its relatively high price tag, Jinks is a quality piece of programming that makes a refreshing change from Breakout.

T.H.

"Jinks succeeds because it is not just another Breakout, and has enough additional elements to make it worthwhile."

on both bat and ball give the game a similar feel to a pinball machine. Those sprites can be expelled with a well aim bounce of the ball. If you are unlucky enough to manoeuvre the bat into a nasty it shrinks

Graphics: 9
Sound: 9
Playability: 8
Value: 7
Price: £24.99

FERRARI FORMULA ONE

Electronic Arts

In contrast to the leisurely feel of *Out Run* and *Test Drive*, *Ferrari Drive*, *Ferrari Formula One* caters for a different class of Ferrari fan. Instead of a Saturday afternoon drive along the California coastline, the game gives you the responsibilities of a whole Formula One race team, from the mechanics to the driver.

A forty two page instruction booklet comes with the disk, which explains each part of the game, with a generous sprinkling of additional facts. A briefer guide to getting started comes as a welcome addition; the size of the main instructions would have been enough to put many off the game. No doubt simulation and motor racing fans will lap it up. For the impatient, however, a race can be driven by interrupting the demo and taking control.

To get the most out of *Ferrari Formula One*, you will need to understand the many sections allowing you to tune your car to the present conditions. Fiorano is your home base. Here you can adjust tyre pressures, suspension, wing settings and engine qualities. These are selected by clicking the cursor on the appropriate part of your car. Some will present simple windows in which the options can be selected. Others are a lot more fun.

"One nice detail is that your opponents are often involved in their own pile-ups and can be seen spinning off the track"

The wind tunnel screen is split into four sections. A side view of the car is seen in the top left corner, surrounded by a wind speed slider control, drag line graph and a wing setting indicator. Using these you can alter the settings so as to give optimum speed or cornering capabilities. A similar screen allows testing of the engine. Both are well done but are unlikely to be used that often.

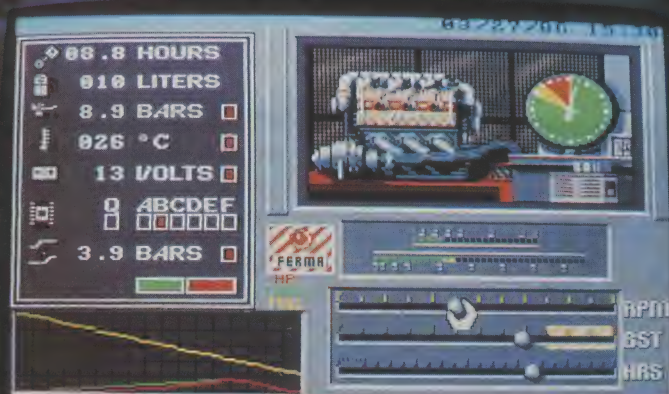


A preset schedule of race meetings has to be followed throughout the season. Going back to the title screen informs you of the location of your next race. It also tells you if you will next be practicing, qualifying, warming up or competing. Time can be moved forward to jump straight to the starting grid.

When the race eventually starts you see your opponents lined up before you. The track is only wide enough for two cars side by side, so overtaking can be a tricky business. One nice detail is that your opponents are often involved in their own pile-ups and can be seen spinning off the track. Steering is controlled with the mouse which allows different degrees of directional control not possible with a joystick. Formula One racing (the highest skill level) is without the automatic gears of the lower classes. Where the game is not so hot is in its speed. Fair enough, there are a lot of calculations and redrawing to be done, but there need to be more frames per second to give a really convincing feeling of speed. I am sure in real life, the ride is not a smooth one, but the driving sequences would benefit from the omission of the simulated bumps which do nothing more than add to the existing jerkiness. Despite this, the mouse is responsive and an acceptable amount of realism has been created.

All the extra car tuning sections will please anyone who likes a good simulation. In theory, the player should need to be skilled at both mechanics and driving, but in practice it is the car driving that counts. If *Ferrari Formula One* is played as a pure race game in the Pole Position style, it could be unsatisfying due to its lack of speed and excitement. On the other hand, if played as a strategic simulation it will give some very polished and realistic entertainment.

T.H.



Graphics: 8
Sound: 7
Playability: 7
Value: 6
Price: £24.95



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WORKBENCH

1.3 (Almost)

With Workbench 1.3 only around the corner, Al Meric takes this opportunity to look at the new 1.3 printer drivers being supplied with some of the latest software packages.

Over the last few months a number of programs have been released that include the new 1.3 Workbench preferences and Printer Drivers. These add several new printer functions, enable a wider range of printers to work with the Amiga and can result in printer operations being anywhere between 3-20 times faster. As Workbench 1.3 has not yet been officially released (it is currently at the Gamma testing stage) there is little information about it. Here, I hope to give you a little insight into what the 1.3 Preferences and Printer Drivers hold in store for you.

Preferences is selected in the usual way but the screen that now appears is a little different (Fig 1.). There is no longer a "CLI On/off" selector box. The CLI icon will now always be on and as usual, will be in the system drawer. Several other selection gadgets have also been repositioned.

Selecting the "Printer" gadget (was "Change Printer" in 1.2) takes you to the new printer selection menu (Fig 2.). This is almost identical to the 1.2 version but the "Graphic Select" gadget has now been replaced with 2 gadgets: "Graphic 1" and "Graphic 2". The "Graphic 1" display (Fig 3.) is very similar to its 1.2 counterpart but now has an additional gray scale option for use with the recently announced A2024 Hi-res monitor. The "Graphic 2" printer screen (Fig 4.), however, is a lot more exciting and has a whole batch of new features. It is with these that this article is primarily concerned.

Antialiasing — When selected this option attempts to smooth any diagonal lines and is ideally suited to programs that graphically dump text such as Prowrite, Pagesetter, Notepad etc. When

using this mode there is, however, an approximate speed penalty of 2:1. The results of tests that I performed were more than compensatory for any speed reductions I incurred.

Color Correct — This option attempts to match the printer's colours as closely as it can to those that appear on the screen. Many of today's colour printers fail to achieve an accurate colour match to that of the screen. Blues often come out looking more like a very deep purple. This feature worked very well when used with our test printer (HP Paintjet). There is again a small penalty incurred when using this mode. In this case the number of colours the printer can produce is reduced. For each colour selected for correction (red, green or blue) less colours become available. With all three selected the usual 4096 reduces to 3172.

Width Limit — The width of a printed picture can be set using this option and can be set in tenths of an inch, pixels or multiplication factor. See Limits.

Height Limit — The height of a printed picture can be set using this option and again can be set in tenths of an inch, pixels or multiplication factor. See Limits.

Left Offset — This enables a picture to be horizontally offset from the left in increments of a tenth of an inch.

Centre — This, as its name implies, will horizontally centre any graphic output to the printer. When selected it overrides any Left Offset that may have been made.

Dithering — There are three different types of dithering that can be chosen from this panel: *Ordered*, where an ordered pattern of dots is used, *Halftone*, similar to the way that pictures in newspapers are printed and *F-S (Floyd-*

Steinberg), an error distribution method useful for colour prints of facial tones. When the *F-S* option is used antialiasing is not available and a 2:1 speed penalty is incurred.

Limits — From here, the way in which the width and height features perform is determined. The options are: *Ignore*, this ignores the width and height settings and sets the picture size as width = (right margin — left margin + 1) / characters per inch and height = lines per page / lines per inch. *Bounded*, this option can be used to ensure that a printed picture's size is no bigger than those set with width and height. It may, however, be smaller. *Absolute*, here the width and height are taken as absolute values (in tenths of inches) and any image printed using this option will be the exact size set. If either height or width (not both) is set to 0 then the picture will be printed to the width or height specified with the other dimensions automatically adjusted to ensure that the aspect ratio is correct. If both are set to 0 then the picture will be printed at the printer's maximum width and as high as it need be to ensure that the aspect ratio is correct. *Pixels*, this is the same as absolute but any values entered are taken as being the number of pixels. *Multiply*, the width and height settings are used here to specify a scaling factor, i.e. if you specified a width of 2 and a height of 4, the picture would be printed 2 × the pixel width and 4 × the pixel height. So if a 320 × 200 image were printed using these settings it would be output as a 640 × 800 pixel image.

Density — This gadget is used to override any density settings made by an application. For printers with multiple densities it would therefore be possible to reduce the time it takes to print out a high density picture by selecting a lower setting.

Scaling — There are two options to choose from here: *Fraction*, this is the default and works in the same way as the 1.2 drivers and *Integer*, this must be one of my favourite additions to 1.3. It ensures that an image is printed out as an even number of dots in both width and height. Therefore, a 320 × 200 picture will be printed as either 320, 640, 960 etc.

1·3 PREFERENCES

Fig 1

1·2 PREFERENCES

Fig 2

Fig 3

Fig 4

dots wide and 200, 400, 600 ect. dots high. This helptst to eliminate the problems that often occurred when printing thin verticl and horizontal lines and which was often very prevalent when graphically printing text. Selecting this option may, however, slightly distort the aspect ratio. From my own experiences of using this mode I inevitably found that the results were far better.

Workbench 1.3 is due for release in the not too distant future and looks set to cause quatie a stir. I, for one look forward to that day.

A.M.

AMIGA FOR BEGINNERS

The big problem with getting any new computer is sorting out exactly what to do when you open up the box! This is especially true for the Amiga – not only is the machine very complex, CBM have never been renowned for the quality of their instruction books! You will probably have heard that the Amiga has a very friendly user interface, with mice and icons, well this is true but just how do you format a disk, how do you backup your system disks? All this information is in the CBM books that come with the Amiga but it is not too easy to find and it has not been produced with the raw beginner in mind.

Christian Spanik has produced a book in the Data Becker series, published by Abacus, that will be of great value to the beginner. The book is divided into 4 main sections, with many sub-sections within each. The main sections are: Starting Out, The Workbench diskette, AmigaBASIC and AmigaDOS.

Starting out explains how to unpack and set up the Amiga for the first time. It is very nicely done with a few diagrams to help clear up any identification problems.

The Workbench section takes you through the functions and utilities available on the workbench disk and the

VERY FIRST thing that it shows you is how to make that all important backup of the system disks. The contents of the various drawers on the workbench are discussed with lots of practical examples.

Another big problem is that the Amiga does not have any resident programming language, the Amiga is what is known as an open architecture machine. This means that you can load any operating system into the Amiga that you like. The Amiga does not have a BASIC language

'It is a good solid 'how to get started' guide to the Amiga's BASIC system.'

supplied on the extras disk and the next section explains how to get this working. It is not a complete guide to the BASIC, that requires a book in itself but it is a good solid 'how to get started' guide to the Amiga's BASIC system. Again there are lots of programming examples and tips on how to use the BASIC system.

The last chapter is the most advanced and you will not find anything like it in the CBM books – a guide to the AmigaDOS system. This is a system of directly

interfacing to the Amiga's disk operating system and it goes a long way toward explaining how the Amiga keeps track of its disk files and the setup of the Amiga operating system. There are some functions that the AmigaDOS can handle much better than ICONS and Mice can. One example is the creation of custom commands that you can tailor to your own requirements (these are known as batch files).

The book is finished off with 5 appendices and a very good index. The appendices are, First Aid – what to do if something goes wrong, Icons – a complete list of the standard Icons that the Amiga uses, Glossary – what all those funny terms mean, The Icon Editor – a guide to this usefully utility program, Technical data – what makes the Amiga tick and some info on the disk storage and memory of the Amiga.

In all this is a very good book for newcomers to the Amiga and Christian Spanik must be congratulated on producing such a much needed book.

A.L.

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VAMPIRE'S EMPIRE

Magic Bytes/Gremlin

A popular criticism of 16-bit games is that while they have excellent graphics and sound, the underlying game may just as well be on any of the leading 8-bit machines. Unfortunately Vampire's Empire looks just such a game.

You take the part of a grumpy old man, fascinated by tales of vampires. He has decided to enter Dracula's

light beam in the right direction. A crystal ball can also be used to catch and redirect the beam.

The trouble is that far too much of the game is spent chasing the light beam around the castle, losing it completely if you happen to fall through a trapdoor or down a staircase. For the first few games, the graphics and sampled creaks and slurps are very entertaining, but



castle and put an end to the bloodsucker by guiding a beam of light through the corridors and chambers into his place of rest.

Dracula's castle is made up of crumbly stonework platforms and staircases. The castle may be crumbling but it is certainly not dead; menacing faces come alive with excellent slurpy sounds as they dribble killing slime onto passers by. Chests are flung open revealing over-friendly young men, goblins and naked blue-skinned women, all of whom such your vital blood supply. Other hazards come in the form of chomping ogres and

"The fast, smooth scrolling background matches the sprites in detail but could do with a bit more variety."

trapdoors. The fast, smooth scrolling background matches the sprites in detail but could do with a bit more variety.

By pressing the button and pulling the stick down you can select one of a few items to help you in your quest. Mirrors have to be placed around the castle to guide the



later games lack the action needed for a good platform game. The very derivative puzzle element fails to compensate for this, and the unhelpful instructions add to the initial confusion. It is a shame that a game that looks as appealing as this turns out to be just an unfortunate mix of two well-worn game styles.

Magic Bytes have some great graphics and sound, put together with some smooth, neat programming. Their only weak area is game design, perhaps the most important part of any development team. As it is, their efforts appear to have been wasted on a lifeless, unoriginal piece of software. There is no part of Vampire's Empire that is particularly bad, but then again none of it is particularly good. Considering its short term appeal, £19.99 seems a lot to pay. But it is worth watching for Magic Byte's next release. There is a lot of talent in this game struggling to get out.

B.V.

Graphics: 9
Sound: 8
Playability: 4
Value: 5

TIME AN

A trilogy of adventures from Level Nine means Andy Moss is hot on their trail. Amiga Time and Magik has arrived.

I first came across the name Level Nine back in 1982 when home computing games were very much in their infancy. I was reading a certain weekly computer magazine, and came across an advert from a company claiming to have reproduced, in its entirety, the original classic mainframe Crowther and Woods adventure onto a home micro. If this act alone was not enough (up to then such conversions were thought impossible) they had also added thirty more locations to it in a new end game. As if this were not enough, to rub salt into the wounds of less skillful programmers, the ad announced that the whole game was available on tape and in one 48K load! That company was Level 9 and the game, Colossal Caves became their biggest selling product and which is still selling to this day. The three brothers Austin, Pete, Nick and Mike who are Level 9 continued to astound us cynical computer hacks with even more outrageous text compression techniques with releases like Adventure Quest and Dungeon Adventure (still my favourite), which seemingly pushed back the boundaries of memory more and more.

By now their place in British computer-lore was well and truly written, and the brothers with work piling in faster than they could cope accepted two ready made adventure stories from a couple of fans. Sue Gazzard wrote The Lords of Time and David

Williamson penned Red Moon. Using their by now tried and trusted ACODE writing system they wasted no time in bringing out the games on all formats. Red Moon signaled a more magic based period for the company, with Pete himself writing The Prince of Magik as a sort of sequel to Moon.

All this was of course B.M.A. (before mighty

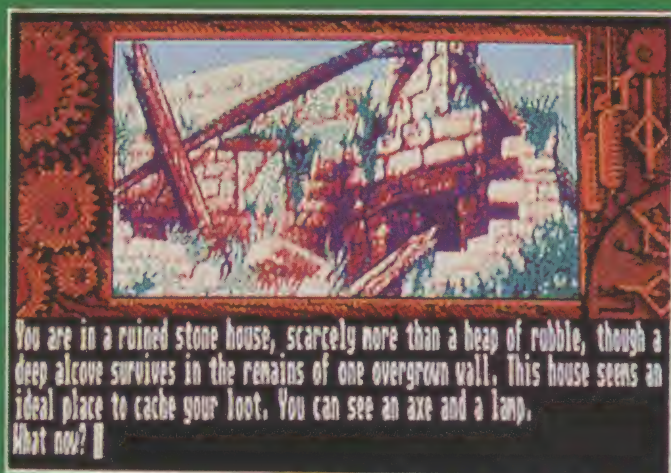


Amiga) and 16 bit was just a pipe dream, but in true pioneering fashion the Austins were already updating their system to accomodate new technology, and bring in graphics to their games.

To begin with they used a simple style of illustration almost as though using the graphics in their adventures was a necessary evil that had to be there because of commercial pressure. This was, of course, true. As more and more adventure publishers decided that text only games would only appeal to the minority and that to get adventures selling they needed to be more "colourful". Level 9's attempts at graphics brought derision from their critics and competitors, so it was back to the drawing board to find another style.

"The plot has been cleverly moulded into one concept which details the struggles of the Guardians to Protect Time and Magik, in three different episodes, hence the three adventures"

This new style coincided with the Austins signing up with Rainbird which really brought big business into their up-to-then cottage industry lives. The graphics resembled a type of Pastel style water-



T D MAGIK



colour effect, again totally different from the standard styles we had all been used to. After a series of releases through Rainbird followed by a series of mishaps, the Austins moved to newly formed Mandarin to Publish their reworked trilogy of games into the all-in-one package, Time and Magik. There is no doubting the effort that has gone into rewriting and coding this release and the three adventures benefit enormously from the new interior design. The plot has been cleverly moulded into one concept which details the struggles of the Guardians to protect Time and Magik, in three different episodes, hence the three adventures.

For the uninitiated, Lords of Time has you as the hero trying to stop the evil Time Lords from changing the history of the World. You have to visit nine (surprise!) time zones and collect the nine ingredients of life, like an olive branch for friendship or a jesters cap for laughter. All the objects have to be thrown into the cauldron the Lords are guarding to put the world to rights.

Red Moon is all about the Red Moon crystal which was the only remaining source of Magik Power. Unfortunately it was lost, and the Guardians have selected you as their lone adventurer to find it.

Finally the price of Magik, has you up against the dreaded magician Mylgar a former Guardian who has gone mad courtesy of the Moon Crystal, and is using the crystal for his no good ends. Only by

defeating him and recovering the crystal can you take his place as one of the Guardians.

"Be careful though as each time you cast a spell your magik points are used up, even saving the game is a spell!"

All the adventures are cracking good yarns, with spells to cast and map making essential (these games do not have the GOTO command as available on say Gnome Ranger). Be careful though as each time you cast a spell your Magik points are used up, even saving the game is a spell!

My favourite remains Lords of Time, as the nine different mini-adventures are each unique, yet are combined by objects found in one time needed in another. Look out for the wholly jumper and the Black Knight. There are digitised graphics for each location and whilst not as detailed as Magnetic Scrolls' Amiga graphics, they are of, as I have mentioned, that Pastel effect which is very original. Time and Magik is a wonderful package for the Amiga user who does not own all three adventures separately, and along with the novella contained in the box, is truly great value for money.

Miss out on this trilogy and you miss out on a bit of history in the making. Highly recommended.

A.M.



WIZBALL

Ocean

When Ocean were looking for games to convert to the Amiga, Wizball, created by Sensible Software, must have been an obvious choice. Almost a year after the original 64 version was released, Ocean have completed the 8 to 16 bit translation.

For a change, the bizarre

Mount Rushmore contribute a great deal to the game's wierd but wonderful look.

Clusters of smoothly animated aliens leave behind green pearls when shot. These can be collected to light up one of a row of icons along the top of the screen. The first couple allow you to hover, making

controlled by a second player.

Each level needs three colours to fill it. When enough colour has been collected, a bonus screen involving much alien zapping is played before entering the Wizlab. This is very well drawn and shows Wiz mixing the colours in his cauldron while moggy laps from a bowl of milk.

Unfortunately, the attractive title screen and Wizlab sequence are about the only real improvements over the superb 64 original. The screen layout is colourful and the backgrounds have a little more detail, but a lot of the graphic effects are missing. The clever way Wiz appears from his own mouth, the swirling sprites, the explosion and even the Wiz sprite all lack that Sensi Soft touch which did so much for its forerunner.

Gameplay has also suffered slightly; Wiz is less responsive which can make death very frustrating. One more disappointment was the sound. All those mysterious gurgles, rumbles and zaps are now short sharp pows and bangs. From all these criticisms, you might expect the game to be pretty bad. This is not the case, as it still performs very well and will be highly enjoyed by absolutely anyone wanting something a bit different. However, strange as it may seem, when played next the 64 version, the opinion of not just myself but the whole office was that the 64 looked as good and sounded and played a lot better. It might seem surprising that the game is being released at £24.95, when the 64 version has just been brought out in a compilation. But, of course, there will be many Amiga owners who did not come from the 64 or 128. While for the ex-64 people Wizball might be thought a fun game but just fails to impress as it should in its Amiga format, for those who have not played it, before it is still Wizball, CCI's Oskar winning best game of 1987.

T.H.



scenario that accompanies the game is actually relevant. Some evil old character has taken all the colour from Wizworld. Climbing into your Wizball, you set out to conquer the attacking sprites and paint the colour back into Wizworld. A little different from saving the world from mutant Thargoids, I think.

Wizball has a strange way of getting around; to start with he can control his bouncing only by spinning at different speeds to change direction. Once you have got used to this you can explore your horizontally-scrolling world. Each level is connected by a set of holes in the ground, which may take the form of pipes, craters or even wishing wells depending on the theme of the level. Obstacles such as stalactites, scaffolding, trees, bubbles and even a replica of

"Each level needs three colours to fill it. When enough colour has been collected, a bonus screen involving much alien zapping is played before entering the Wizlab"

the control a lot easier. Most of the rest will increase your fire power to varying degrees. The most important of the icons is the third; this brings on your pet cat in his own little green ball. He is essential for collecting the colour droplets that bounce along from time to time. These first need to be shot before being scooped up by the cat, which can be under your control, or

Price: £24.95
Graphics: 8
Sound: 7
Playability: 7
Value: 7

ASSEMBRO

Despite C being the 'in' language for the Amiga, more and more programmers are now moving over to Assembler. Simon Benvenuto explores the depths of AssemPro, a new contender for the 68000 market.

AssemPro is described as a "Complete Assembler Language Development Package". It is an integrated environment, providing an editor, assembler, debugger and a number of utilities. AssemPro is packaged as one non-bootable disk and a 100 page bound manual. It is implemented as a single monolithic program and runs from either the Workbench or CLI. It can run on a single drive system but requires at least 512k (leaving around 150k free for your program to run in).

After double-clicking the AssemPro icon, all but the screen's drag bar is occupied by the editor window. Behind it are the assembler, debugger and table window (which provides reference tables). The windows are resizable but cannot be closed. Neither do they multi-task, so you cannot start an assembly and continue editing while it runs. However, you can open multiple edit windows.

The edit window shows a status line at the top and horizontal and vertical scroll bars across the right and bottom borders. Selecting the status line toggles it between status and tabs display. Tab stops can be set in any column and are saved on disk together with function key definitions, text buffer size and check marked menu options. The following menu options can be check marked: Icon (creates an icon for the text file), backup (keeps last version of the file as a backup), text & paper colour (choose which of the four Workbench colours to use for text and paper), and insert/replace mode. The ability to customise the editor in this way is much welcomed.

All AssemPro windows use a standard file requester. This requester appears with the current directory listed. You can scroll the list, or select any entry. If you select a directory it will be listed. There is a "/" gadget to move back to the parent directory and a CD gadget to make the listed directory the current directory.

There is also a DISK gadget which displays a list of devices, from which you can select the default drive. You can also select a directory or file by typing in its name. This requester, together with File menu options to rename and delete files and create directories, means you seldom need an AmigaDOS command or the CLI.

Other editor menus provide Search and Block commands, as well as setting the function keys and enabling one to undo changes to the current line. Menu functions have command sequence equivalents. Each function key can be assigned to a string of these commands together with a one-line description. The function key either executes the command string, or when shifted, displays its description in the status line.

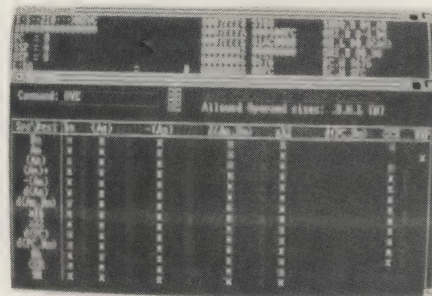
'A macro could generate code to load the effective address of a string, then switch to the data segment and define that string.'

The two-pass macro assembler has a number of unusual features.

There is no length restriction on symbols, variables can be local to the macro or include file in which they are referenced, macro parameters can be named and typed, conditionals can include an ELSE clause, there is a REPEAT...UNTIL construct which allows repeated assembly until the condition is true and the INPUT directive prompts for the value of a variable at assembly time. The IBYTES directive reads a file and inserts it unchanged into the code output by the assembler. For example, you could insert (uncompressed) image data (from an object or icon editor) directly into your program's data area, to be passed as a

parameter to the graphic rendering routines.

AssemPro supplies the 1.2 version of the Amiga include files. These are large and often only a few of the symbols are needed. SLABEL allows you to build a library of variables and macros. These are saved onto a file in a special internal format and can later be included using ILABEL. The idea is that you build SLABEL files from the normal include files but only save the value of the few symbols you will actually need. These libraries are smaller, can be processed faster and will use a lot less symbol table (and therefore RAM) space. The CODE, DATA and BSS directives direct subsequent code to the appropriate segment. When you assemble the program, you specify whether each segment will be loaded into chip or fast memory when the program runs. One interesting point is that you can switch between the different segment types at any point in your code. For example, a macro could generate code to load the effective address of a string, then switch to the data segment and define that string, then switch back to the code segment and generate a jump to subroutine.



The assembler can read the source code either from a disk file, or directly from the editor buffer. The program code is assembled in RAM and must be saved

ASSEMBRO

to disk. You can save it with an icon if you want it to be executable from the workbench. A start-up include file is provided which allows programs to run from either the Workbench or CLI. AssemPro always produces executable files. You cannot produce object files to be processed by the AmigaDOS linker. Neither does the assembler provide XREF or XDEF directives. The assembler has a PC-relative Code option which forces the code to be PC relative (ie: position independent). The load file produced contains no relocation information, only code and cannot be run from the Workbench or CLI. This option is intended for producing code to be called from BASIC. Presumably, such code could be inserted into a program using IBYTES, allowing a crude means of linking-in subroutines.

The assembler can produce an error file which can then be loaded into the editor. The editor displays each error message in the status line, with the

syntax errors.

The debugger window is divided into two halves. The left half displays the status register, program counter, supervisor and user stack pointers, as well as the segment list and task addresses. Sixteen further lines display the register contents. However, you can change the effective address of any line to display a byte, word, or long word using any of these addressing modes: register direct, address register or program counter indirect (with optional displacement and/or index), or absolute address. This allows you to track any register or field within your program or within a data structure pointed to by any address register. The right half of the debugger window either dumps or disassembles storage. In dump format, you can change storage by overtyping the displayed value. If the program being debugged is the one that was last assembled, the debugger uses the assembler symbol table to provide sym-

ecuted. There is a scroll bar down the right border of the screen which allows you to scroll the storage display window.

You can set a register's value to the result of an expression. This expression can include arithmetic and logical operators. You can trace a program in a single-step or continuous mode. Hitting the escape key stops the trace. You can treat subroutine calls as single instructions, or trace only those instructions which alter sequential flow (such as branches, traps, subroutine calls and returns). The debugger can disassemble code into a file, in a format which can later be input to the assembler.

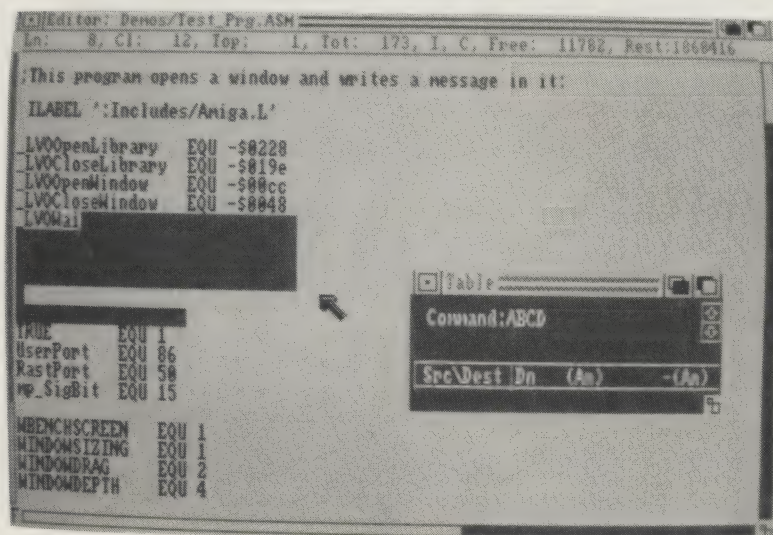
Finally, the tables window allows you to list the addressing modes allowed for each instruction. You can also load in external tables (which you can setup yourself). AssemPro supplies tables for the Amiga libraries and devices. Each entry lists the routine name, mnemonic parameter names and corresponding registers. These tables are keyed on routine or instruction name: you can type in a full or partial name, or scroll through the table. Within the editor you can place the cursor on the first character of an instruction, then hit the help key. The tables window will come to the front, listing the instruction's addressing modes.

The AssemPro manual is well structured and clearly written. It assumes the reader is familiar with assembly language programming. Even so, it would be agreeable if it had included more examples on using the non-standard features of the assembler. The main limitation of this program is its inability to produce object files, which can later be linked. This means that you cannot split your program into various modules, nor link it with other languages such as C. If you want to use multiple edit windows, or run memory intensive applications, you might need more than 512k of RAM. But for those writing single module programs, or assembler code to be run from BASIC, I can recommend AssemPro; it soon grows on you.

S.B.

Price: £49.95

Contact: Precision Tel: 01-330 7166.



cursor position on the appropriate source line. Alternatively, you can deal with assembly errors as they happen: a requester displays the line in error, allowing you to edit it, save it and then continue assembling. This is very useful for simple

boldic disassembly, displaying labels rather than numeric offsets. You can select any storage address (with the pointer), then mark it with a symbol or set a breakpoint. You can also drag select across a range of instructions and these will be ex-

★ Program Submission Procedure ★

DO NOT submit any program or routine that you do not either own or have proper authority to do so.

ALWAYS include your name, address and the date on all material and any enclosures.

Do not forget to make it clear exactly which computer/s your program or article is applicable to.

Include ROM or DOS versions wherever they are pertinent.

Number all pages.

If you have to submit work which is hand-written then you must make sure it is printed clearly.

Never use staples. Use paperclips if necessary.

If you are saving your program to tape then save it AT LEAST twice on each side.

When you save a program on disk save it twice and call the second file "BACKUP".

Remember to label all tapes and disks with your name and the title of the program. Label tape or disk with your name and the name or title of the program.

Always ensure that disks are well packaged. They should ideally be sent in a commercial disk mailer or at least packed between two pieces of cardboard or rigid plastic.

Please allow at least 8 weeks for acknowledgement as all programs have to be thoroughly tested and made into a suitable format.

Enclose a self-addressed stamped envelope or package if you would like your program to be returned.

★ Programming tips ★

If you can, use CHR\$(x) type commands instead of those hard to read graphic symbols.

If necessary renumber your program on completion as many readers use auto number utilities to ease typing in.

Try to keep instructions within the program itself at a sensible level. You can expand on them within the accompanying text if necessary.

TEST your programs before submitting them or even better get a friend to test them for you.

If a program contains machine code data please use decimal and not hex as there are fewer digits to be confused. Try and keep the same number of data statements in each line. Please add some form of error checking if your program contains more than five lines of data.

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DIGI-DROID

A new piece of hardware for the Amiga is almost guaranteed to attract attention. Bill Hardwick tells us about a gadget that caught his eye.

Those of you who own a New Tek Digi-view digitiser and 1.2 software may not realise that the program has a hidden talent. It is tucked away quite unseen and only becomes available when you connect Digi-Droid to your second mouse port. "But what is Digi-Droid?" I hear you ask... It looks much the same as the usual 3 colour filter wheel that comes as standard with Digi-View but it has an additional black unit, about the size of a matchbox, situated between the wheel and the supporting arm.

This unit houses a small electrically driven motor which is able to precisely rotate the filter wheel. It draws its power, via a long lead, from the second mouse port. If you attach a Digi-Droid to your camera and Amiga, you then have a completely automatic digitising system.

The first time you use Digi-Droid you will need to set it up. This is achieved via a simple set up panel, which is used to adjust the position of each of the filter wheel's coloured sections and should take less than a minute. These settings can then be

saved to disk and are automatically read in each time the software is used from then on. If you now examine the Digi-View drop down menus you should find an additional entry after the usual red, green and blue options — AUTO. No longer will you have to remember whether you have manually turned the filter wheel, no more fingerprints on the edge of the filter wheel, just select AUTO and stand back while Digi-View and Digi-Droid get on with digitising your picture. Digi-Droid may not make the coffee but when fitted you will not have an excuse not to do so yourself. Once used it soon becomes a valued item of equipment.

B.H.

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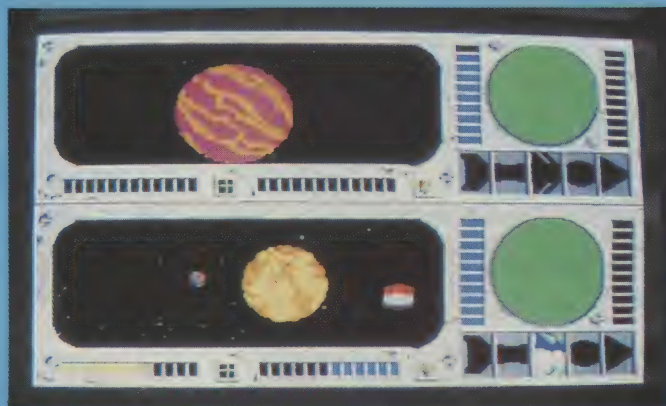
Microillusions

It must have taken the chaps at Microillusions at least five seconds to come up with the name for this one! Galactic Invasion... it sounds like one of those early "home grown" ZX81 games that almost filled the whole 1K memory.

Three options open the game: player against player, player against computer or two players over a modem. The game is set in a couple of galaxies. Both players' objectives are to find five parts of a missile with which they can destroy their opponent's galaxy. A split screen shows the view from each player's ship.

All the planets in the galaxies have satellites which can be shot to reveal a part of a missile. When a part has been found it must be flown into to pick it up. Sections of the missiles are colour coded, and as a whole missile must be the same colour there is a lot of flying and searching to do.

3D starfields have been around for years, but the programmers of Galactic Invasion have still not got the hang of it. Both stars and planets jerk around very unrealistically, not the sort of thing you expect from the Amiga. The packaging boasts "digitised sounds", but digitised from what? A Spectrum? Galactic Invasion looks unimpressive but its worst



point is that it is just so boring! Absolutely no excitement, tension or atmosphere is created and as a result is a real chore to play, from start to finish.

T.H.

Graphics: 3
Sound: 2
Playability: 2
Value: 2
Price £18.99

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Joe Blade

Players



Joe Blade was one of the most successful budget games of last year and must have been an obvious choice for 16-bit conversion. Its Amiga version sells in the budget market for £9.95, though whether £9.95 is really that cheap, I'm not sure.

Game designers must be getting hard-up for scenarios; this time there are more hostages to rescue on your one-man mission against the enemy army. Today's villain goes by the name of Crax Bloodfiner and has kidnapped six world leaders. He is holding them hostage in his lair, threatening to kill them if the thirty billion dollar ransom is not paid.

You are Joe Blade, hard nut commando and all that stuff. Bloodfingers' lair is a maze of corridors and cells, constantly patrolled by guards. Your semi-automatic machine gun can be used for shooting the guards, or Joe can perform one of his record-breaking six foot high leaps over their heads. These guards are also armed but never shoot, instead they drain your energy when you touch them. Your mission has two parts: the first is to find all six hostages, and the second is to find and activate all the explosives to blow up Crax's lair. Hostages can be found slumped against walls, and are rescued simply by touching them. If

"Although the sprites are excellently drawn, they all look the same, as do most of the locations."

you locate a bomb, the letters A to E appear in a random sequence across the screen. Before the

time limit runs out you have to rearrange them into alphabetical order by switching two at a time.

The shooting and dodging of the guards could have been an exciting part of the game, but they are very easy to kill. The only way they ever pose a problem is if you enter a screen with one standing right on top of you. Although the sprites are excellently drawn, they all look the same, as do



most of the locations. For most of the game you just scroll through bare corridors, occasionally entering an office or yard. This was fair enough with the 8-bit versions, but the Amiga should really have more variation. It comes to the point after a short while where you start to jump instead of walk to add a bit of interest.

A soundtrack or more sound effects would have made it a lot more fun to play. As it is, there is some sampled gun-fire and one or two other spot effects. The maze of rooms will be a plus for cartographers and the bomb puzzle ties in well with this, but the game needs more action or puzzles to make it worth playing for more than half an hour. The conversion has been carried out accurately, which is the problem. The original's simplicity does not do the Amiga justice.

T.H.

Graphics: 7
Sound: 6
Playability: 5
Value: 6
Price: £9.95

STELLAR CONFLICT

Your world has managed to survive for billions of years but, as the blurb for this inter-stellar strategy game would have it, the end is now in sight. Resources are fast being depleted, invading marauders are an ever-present menace and your subjects are getting fed up to the back teeth with the quality of life.

As emperor of your world, it is up to you to build a fleet of starships and deploy them in a last ditch effort to stabilise your empire and establish peace before hostile forces bring your reign to an untimely end. What this peace mission actually means in practice is sending out your ships to conquer the galaxy, planet by planet. Manage massive starfleets, fly the heavens, flatten all opposition and conquer umpteen planets, all by teatime, please. Strategy games designers are nothing if not big thinkers and issuers of tall orders!

Stellar Conquest likens itself to the boardgame, Risk, but says that by virtue of its computerisation, much more is left to the player's imagination. This is possibly true but I would not have said that in this instance that was something to shout about. The rudimentary graphics and fairly lacklustre

computer's turns are automatically concealed (they just do not appear on screen), all human players must make their own arrangements to co-operate — in other words, promise not to peek while another player is at the keyboard.

There are 3 skill levels to choose from — these affect both the time available for each player's turn and certain bonuses. Three options are on offer — timed turns (limit the time for a player's turn), access codes (prevent another player from accessing your data) and rebellions (to make the game harder). You may also decide to limit the game to a fixed number of turns or let the computer generate a random turn limit.

Each player begins with an allocated number of craft and attempts to rule the galaxy by sending ships to neighbouring planets to conquer them, establish colonies and increase his income. With increased wealth, more ships can be built and thus more planets can be conquered.

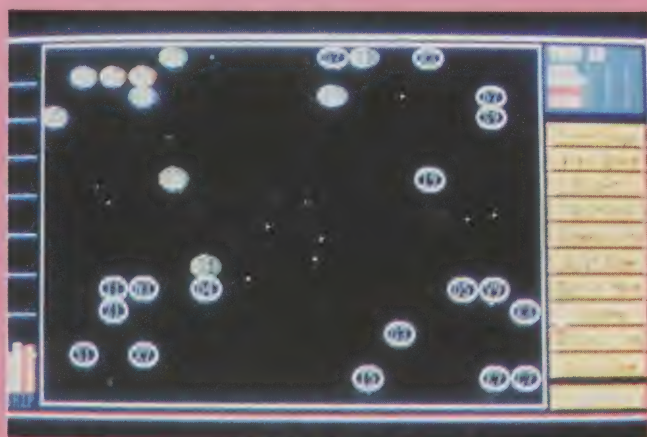
At the beginning of every game, a new starmap is randomly generated and you can proceed with that one or request another ad infinitum. Multiple attacks within a turn are possible, as is the ability to send and receive messages to and from other players.

There are 4 classes of planets, each of which has a differing resource development and production potential and rebellious or non-rebellious inhabitants. Travel between planets can be in hyperspace, superspace or extended space mode — differing degrees of speed, basically. There is no animation — the basic stats and the starmap are simply updated to reflect the new position.

Information can be obtained on ships in space, owned planets, distances between the heavenly bodies, income and battle news. Battle news gives you the name, class and image of the planet, details of the attackers and defenders (names, numbers and personal colours) and the outcome. Income information includes total resource units produced, ships built and remaining continuation.

Stellar Conquest is only mildly interesting — it lacks the depth and variety needed to make it a game that is likely to grip for long. However, although it does not make much use of the Amiga's undoubted graphics and sound potential, the game is enjoyable enough in its own way and is certainly easy to get into. A simple game at heart, Stellar Conquest is more likely to be suited to the novice strategy games player. There just does not seem to be enough in it to challenge and stimulate the experienced player.

B.C.



presentation do little to generate any excitement and atmosphere and so the game leaves perhaps too much to the imagination.

The main display, the starmap, is nothing more than a static, two dimensional picture of a number of planets (initially just empty white circles) dotted across the heavens (a black background). To the left of this is a time bar showing how much time you have left while on the right is a message/prompt area and the menu of commands.

The game is intended for 1-4 players, any of whom can be human or the computer. Since this is a multi-player tactical game relying on the fact that each player does not know what the other is up to, it is essential that each player's turn is hidden from the rest of the participants. While the

Graphics: 5
Sound: 2
Playability: 6
Value: 5
Price: £29.99

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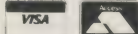
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grateful for the special help we have received from Hobbyte Ltd. Prices include VAT, where necessary and may, of course, be subject to change. Consult your dealer for price confirmation.

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UPDATE DEUTSCHLAND

Chris Holmes keeps in touch with the German Amiga scene.

After the recent impressive Hanover computer show in Germany it may come as no surprise to learn that the Amiga is rapidly establishing itself as a major presence in the German home computer market. With Commodore unveiling two new Amigas (the A2500 and A3000) and announcing a transputer add-on for the Amiga family, things have certainly heated up in the race between Atari and Commodore to gain the nod of approval from the German consumer. With some 78% of the total home micro market, CBM is, of course, far ahead and plans to keep its lead.

As well as the changes promised by Commodore in the hardware market, Amiga software continues to sell very well indeed in Germany and the quality of German software is most definitely improving. You may remember that in the last feature on the German Amiga scene, we said that there could be some awesome Amiga games to come from Germany because of the success of the Amiga 500. The Great Giana Sisters is probably the first Amiga game of this level to be released anywhere in the world and that is not an idle claim. So what makes this game so special compared to other Amiga games currently available?

The answer to that is the sheer simplicity and undiminishing addictiveness offered by Giana Sisters. The game is a cross between the coin-op classics Wonderboy and Super Mario Brothers. The graphics are simple and clear, the music is hypnotic and the scrolling is super smooth. As well as possessing compulsory ingredients like these for a hit game, it is packed with humour, a great feeling of momentum while controlling Giana (who just happens to be the Star of the game) and sense of gameplay that is unrivalled on any home computer.

The game is released by Time Warp in Germany but many software companies of other countries are eagerly trying to sign the rights to release the game. When it is eventually released make sure that you buy a copy immediately as it is guaranteed to cause many sleepless nights!



At the other end of the scale in Amiga games is the completely awful Soccer King from Kingsoft. I can only imagine that this game was released to capitalize on the interest that is being generated by the European championships, held in Germany in June. Soccer King is the first football game to appear on the Amiga but that is no excuse to buy it. The graphics are crude, the scrolling is jerky and the gameplay is drab. This is surprising as Kingsoft has established a reputation for successful games including a CEI Oscar winner. No doubt we can expect better from them in the future.

"packed with humour, a great feeling of momentum... gameplay that is unrivalled on any home computer"

Elsewhere in the German games market, MagicBytes are rapidly establishing themselves as a software company fully capable of creating quality Amiga Software. Having already released Vampires Empire and Pink Panther, the company has also nearly completed two other major titles, Tom and Jerry and Paranoia.

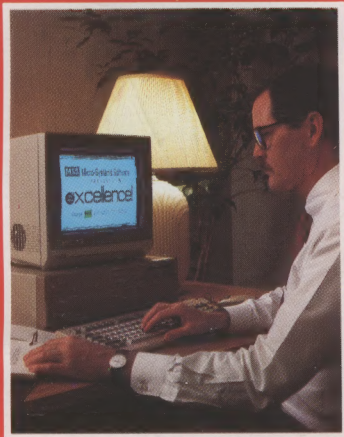
Those who have visited Germany will know that the games market is not the only interest of German computer own-

ers. In particular, peripheral hardware is a very important part of the German computer Market. Recently, due to the success of the Amiga 500, there are many third party companies that are selling hardware such as external drives and half Meg Ram packs for the machine. A typical external disk drive for the Amiga will cost about 240 Dm (about £80) in Germany. As well as Disk drives and RAM packs, modems are extremely fashionable for the Amiga in Germany. A top of the range Modem with full duplex facility would cost about 1000 Dm, whereas in the U.K., for example, you wouldn't receive much change from £500.

Hardware is relatively cheap in Germany, probably because the country's industrial base has higher productivity than most other nations', and consequently enjoys greater economies of scale than Britain. This summer the Amiga family will be celebrating its third birthday in Germany and the public there are every bit as excited about the Amiga dimension as they were when it was first unveiled to them almost three years ago. Germany has become an important, possibly the major factor in the Commodore picture and a tremendous influence on the Amiga drea. If present signs are correct it will continue to be a major asset to Commodore well into the 21st century.

C.H.

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